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Amateur Radio

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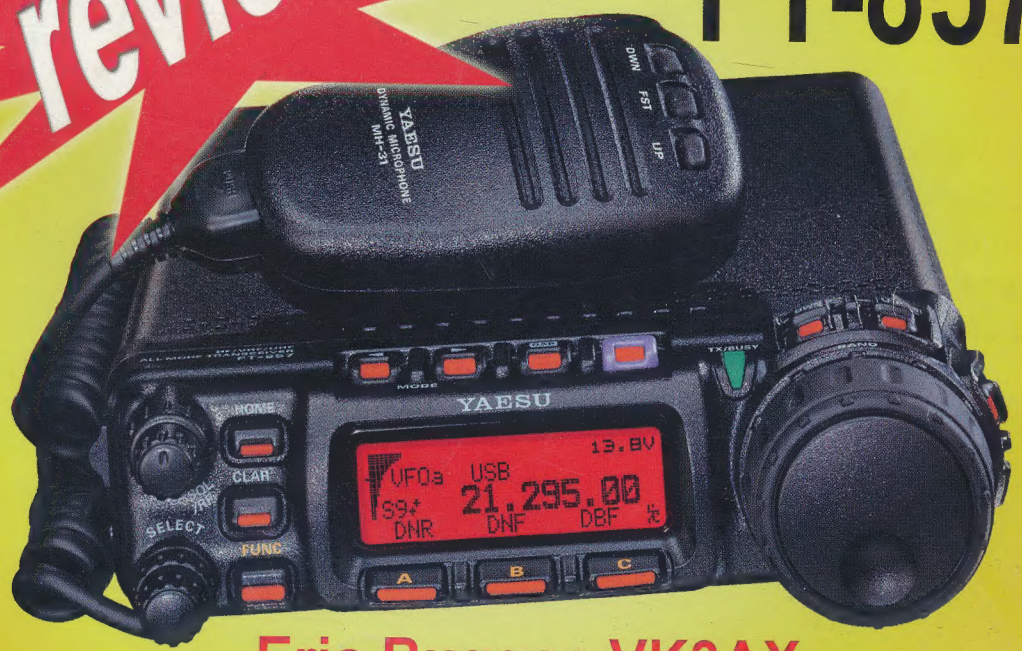
The magazine for AUSTRALIAN radio amateurs

review

Yaesu FT-857D



Eric Buggee VK3AX

tests the most compact transceiver of its type and finds it exceeds expectations

Part one of

VHF and microwave propagation characteristics of ducts

Andrew L Martin VK3KAQ

Part 3 of

Unravelling the mysteries of connecting radios to antennas

Brian Clarke VK2GCE

Using the HP 8405A vector voltmeter

Richard Sawday VK5ZLR

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Our Cover this month

***Amateur Radio* magazine will be presenting a selection of reviews of both new transceivers and ancillary equipment on a regular basis. Eric Buggee VK3AX will be doing the technical tests. His first review is of the Yaesu FT-857D transceiver.**

See page 22 for the results of Eric VK3AX's test.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA National Office (until stocks are exhausted), at $4.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

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Founded 1910

Representing
The Australian Amateur Radio Service

Member of the
International Amateur Radio Union

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Editorial comment

Colwyn Low VK5UE

One year old and going strong

The national WIA has had its first birthday and seems to be healthy.

The basic organisation is operating, but like all dynamic systems there are things still to be fine tuned, things that now need to be done in different ways and completely new things that the new structure and changing times require. Some reports from the AGM will appear in AR but others will only appear on the WIA web site. The financial reports have been distributed as an enclosure with AR. I am sure if you do not have access to the web then copies will be available from the WIA office or a friend can print you a copy from the web site. Further the President's News and Comments columns are dealing with the business of both the AGM and the Open Forum held after the AGM.

For those who like contests we are definitely in the VK contest season. Harry Angel Sprint, VK-trans Tasman contests, Jack Files Sprint, RD and ALARA should have keen contesters looking forward to a rest in September. I did read in CQ an article from an ardent Contest operator who had gone to considerable lengths to improve his health and fitness so that he was in peak condition for all contests and not nodding off at 4 am! Who said amateur radio was a sedentary hobby. WICEN is active in many states now supporting sporting events. The Australian Rally Championships have rounds in most states. The VK7 notes cover Targa Tasmania and VK5 is getting ready for Rally SA in early July.

I am still sorting out my aerials with VK5JST's aerial analyser. When you can look at frequency, resistance and impedance together you learn a lot about the system and wonder why it worked at all in some cases. I have also sorted out my mistakes with the low power meter from June 2001 QST. When you can sense nW, yes nanowatts, screening is important. I also learnt something about making PC board boxes and where to source brass nuts locally. I am quite pleased with the result. On the way I had a refresher course in power measurement units and design of attenuators. Putting together the calibration set up with the FT101, the Bird Thruline wattmeter, the CRO, the dummy loads and my HF power meter, till now uncalibrated, took some time and a lot of bench space. More learning.

BPL is still on the amateur agenda but overseas there are cases of BPL experiments being terminated due to the interference they caused. We should all be thankful that we have a few teams of amateurs who are prepared to monitor the VK tests of BPL. I think the next BPL tests are in VK7 where the amateurs are ready. Good hunting.

New licences are being actively pursued by the WIA with the ACA, we are getting action on the amateur radio review in two parts and the new licences are in the first part. See the WIA web site for more info.

Please note that we have all the information on the revamped WIA DXCC awards in this issue. Turn to the inside back cover to see the certificates in all their glory. Mal Johnson VK6LC has done a great job. Thanks Mal.

73 Colwyn VK5UE

41st Annual Amateur Radio Convention
&
Australian Fox Hunting Championships
South East Radio Group Convention 2005
June 11-12
(Queen's Birthday long weekend)
Mount Gambier Scout Hall
(08) 8725 4335 or 0407 718 908 or email at vk5zx@internode.on.net

Michael Owen VK3KI

The first year of a national WIA

With the first anniversary of the adoption of the national Constitution on the 16th May, it is appropriate to look back at this first year of our restructured WIA.

In the last twelve months there were some 48 members who became silent keys, but there were three who were particularly significant for the WIA.

Last October we lost Henry Andersson, VK8HA, national Intruder Watch Coordinator until shortly before his death, and an Honorary Life member of the national WIA.

In January we lost Peter Naish, VK2BPN, WIA secretary, a former Federal President and Chairman of Directors of IARU Region 3.

In April we lost Ron Smith, VK4AGS, national Education Coordinator.

June Fox will retire shortly. Judith Oliver, who has joined the WIA to take over June's role, is currently working closely with June and Emma Trebilco to understand our organisation.

The office continues to manage the membership applications and renewals, and from that the mailing lists for AR as well as managing the WIA Exam System and the very many other activities associated with the WIA.

The restructure of the WIA has led to many new responsibilities, and will continue to do so as we establish new procedures, and address new tasks, for example, procedures to deal with the new QSL obligations.

We are now about to trial new membership software, so that we can have access to information more flexibly, and various accounting functions can be carried out automatically. We are also installing new and current accounting software, which will better interface with the membership management software. All this has to be completed quickly so that we can start our new membership renewal cycle in June, with the new Family Membership and a 5-year subscription.

We have purchased two new PCs and a new photocopier/printer.

Funds have been set aside to allow some office refurbishment, which is now taking place.

Over the last year we have repeatedly stressed the importance of the clubs to the WIA, and nearly 60 clubs are now Affiliated Clubs of the WIA.

In the past year we have visited as many clubs as possible.

We have sought to identify the needs of the clubs at the various meetings we have attended, and are now working to meet those needs.

During the year the WIA became a beneficiary under the will of the late Henry Andersson, VK8HA. He left his property at Humpty Doo to the WIA, and we successfully sold it only the other day.

Since July 2004 the former Q-News team led by Graham Kemp, VK4BB has been the national WIANews team, providing a totally professional national weekly broadcast, rebroadcast right across Australia.

In the past year we have really enhanced and up dated the WIA website on an almost daily basis.

We have worked closely with the AR team.

Through the WIA website, broadcasts and AR, the WIA Board has sought to ensure that as much information as possible about what the WIA is doing is made available as quickly as possible.

Each of us who accepted a role on the board of the WIA after the adoption of the new Constitution just one year ago was very aware of the challenges that we faced

Of course, representation is the fundamental responsibility of the WIA.

In August last we sought changes to the Australian Spectrum Plan, and the 3776-3800 kHz "DX window" was added to the Plan, and the band 1825-1875 kHz was allocated primary status.

Also in August 2004 the WIA also made submissions that were ultimately successful in relation to the 5.6 GHz band.

The WIA is represented on the Preparatory Groups already working on the next major ITU conference, the World Radiocommunications Conference scheduled for 2007, with several matters directly affecting the amateur service. Australia now proposes a table entry, rather than a footnote, to allocate the band 135.7 – 137.8 kHz to the amateur service on a secondary basis.

We have made submission to the ACA in respect of the allocation of spot frequencies around 5MHz, as in the USA among others. These submissions have now been rejected, and the WIA is now preparing a response.

The WIA has proposed a new and we believe better way of examining candidates for amateur qualification, accrediting and registering assessors after they have completed a course conducted by a Registered Training Organisation.

The WIA has conveyed to the ACA its considerable concern at the suggestion that the new licence structure, including the Foundation Licence, originally promised for early this year, will not come into force before the third quarter of this year, and has suggested separating the new licences from other proposed changes to the amateur LCD, with the new licences to come into effect by 30 June this year.

During the first 12 months of the national WIA, BPL interference has emerged as a major and global issue affecting amateur radio and other users of the HF spectrum. The WIA is continuing to advance informed and reasoned opposition to that threat, and will be responding to the ACA's discussion paper on BPL.

The WIA continues to be represented on the relevant Standards Australia committees.

We have fulfilled our promise to provide a QSL service for WIA members at no cost, using the existing QSL structures.

The Board at its last meeting considered

continued on page 18

WIA news

Open Forum

Following the formal Annual General Meeting of the WIA at the Italo Australian Club in Canberra on 7 May 2005, the first Open Forum was held.

Reports were presented on behalf of the Board by the President, and covering ITU matters, BPL, Awards, Contests, Standards, the Technical Advisory Committee, WICEN, the Victorian Advisory Committee and AR.

There was discussion over a very wide range of topics, not only those raised by the reports but including such matters as marketing, multiple call signs and two letter call signs, a possible Code of Practice for amateurs and on air behaviour.

WIA Secretary, Chris Jones, VK2ZDD concluded the meeting by saying that he thought it had been a success, as the WIA had not been politicking but trying to make amateur radio work better.

VK3LC elected WIA Life Member

Alf Chandler, VK3LC, who will be 100 on June 1 was elected an Honorary Life Member of the WIA at the Annual General Meeting on 7 May 2005.

Alf, who has been a member of the Publications Committee and Intruder Watch Coordinator was proposed to the WIA Board by Amateur Radio Victoria. The Board agreed, and, as required by the Constitution, nominated Alf to the AGM, which unanimously approved the nomination.

WIA President, Michael Owen, VK3KI will present his Honorary Life Membership to Alf at a special function to be held in his honour by the Moorabbin and District Amateur Radio Club on 31 May.

Delay in new licences

On 4 May 2005 WIA President, Michael Owen, VK3KI, announced that the WIA had been advised by the ACA as follows:

"In the Media Release No. 41 dated 31 May 2004, the Australian Communications Authority (ACA) indicated that it expected the new arrangements to come into force early in 2005. However, the Outcomes of the Review are now not able to be introduced until the third quarter of 2005. The ACA will provide further advice on this matter as soon as a date for the introduction becomes clear."

"As the WIA approaches the end of this first year as a national body, this news of further delay in the introduction of the restructure of the amateur service in this country, and particularly the introduction of the Foundation Licence, is very disappointing."

At the Open Forum following the Annual General Meeting a resolution was unanimously passed expressing concern at the further delay, accepting that some issues raised in the Outcomes could be delayed, but requesting the introduction of all new licence classes by 30 June 2005.

The WIA President has written to the Acting Chair of the Australian Communications Authority conveying the WIA's serious concern, and requesting the introduction of the new licences by 30 June 2005.

GA Taylor Medallion awarded to VK4BB

During the 1980s the then Federal Council developed a special award to mark extraordinary service to the WIA, and a medal of intrinsic value was created by the Western Australian Division, the GA Taylor Medallion.

The reason for its title is inscribed on the wooden box holding the medallion in the following words:

"Major George Augustus Taylor was the founding Chairman of the Wireless Institute of New South Wales in 1910, out of which grew today's Wireless Institute of Australia. He was a pioneer in many ways; granted one of the first transmitting licences under the 1905 wireless telegraphy act (prior to 1908); he was among the first ten wireless experimenters to have been licensed by the PMG Department (1909); demonstrated that pictures could be sent by wireless (1910); transmitting the first military wireless signals in Australia (1911); conducted the first wireless communication between moving trains (1911); was the first to fire a gun by wireless (1913)"

Since its introduction, only 5 medals have been awarded.

The WIA Board reviewed the rules for the various awards at its meeting in April, including the GA Taylor Medallion, and decided to award it to Graham Kemp, VK4BB.

At the start of the Open Forum WIA President, Michael Owen, VK3KI, presented a very surprised Graham with the medallion.

He pointed out that Graham had brought the national WIA right across Australia since July last year, with his WIA News team presenting the VK1WIA broadcasts.

"The only criticism I have heard of the broadcasts is that they are too professional", said Michael.

Ron Wilkinson Achievement Award presented to VK1ZKM

The Ron Wilkinson Achievement Award was created in the mid 70s by the generous gift of Mary Wilkinson, the widow of Ron Wilkinson, who gave a sum of money to the WIA to perpetuate the memory of Ron, to provide a certificate and $200 to be awarded annually to mark exceptional service to amateur radio. It was first awarded in 1977 to Wally Green, VK6WG for the 1296 MHz record breaking contact, and in the following year to Alf Chandler, VK3LC, for his work in coordination Intruder Watch Coordination.

At the Open Forum WIA President Michael Owen, VK3KI announced that the Board had decided to award the 2005 Ron Wilkinson Achievement Award to Keith Malcolm, VK1ZKM, a professional communications engineer, who represented the WIA on a number of important committees, including interference and in preparation for 2007 ITU World Radiocommunications Conference. However, the award was made to particularly note Keith's contribution as a member of the Australian Delegation representing the amateur service nominated by the WIA for the four weeks of WRC 03.

Judith Oliver joins the WIA

WIA President announced at the Open Forum following the WIA Annual, General Meeting in Canberra that Judith Oliver, with a background of teaching and charitable/voluntary organisations had joined the WIA to take over the role of June Fox, the cheerful voice of the WIA for nearly 18 years, who is retiring.

ar

VHF and microwave propagation characteristics of ducts

Part 1

Andrew L Martin, VK3KAQ

Observations from many years of amateur radio operations together with commercial microwave propagation studies are used to illustrate the nature of the VHF propagation in ducts. Recently developed formulae for characterizing VHF and microwave propagation in ducts are used and modified to reconcile the observations with theory. Measurements from a high resolution SODAR (SOund Detecting And Ranging) are used to show the complex structure and characteristics of elevated ducts. The ducts are shown to have very strong temperature gradients and to form in substantially the same range over long periods. The ducts are very stable in the vertical plane and dissipate during the day. Equations and diagrams are used to illustrate how refraction enables propagation to occur in ducts and how signals enter and leave a duct. The nature of VHF propagation via ducts is illustrated using basic ray diagrams.

The first direct association of beyond line-of-sight propagation of VHF signals with meteorological conditions was made by Ross Hull in 1934 [1]. Although Marconi had been able to send VHF signals beyond line-of-sight to a distance of 258 km in 1933, he had not made the association with meteorological conditions although it was evident that such propagation could not be explained by diffraction [2,3]. Since Ross Hull published his work there have been many experiments conducted in many countries to measure the VHF and microwave propagation characteristics associated with various meteorological conditions including ducts. Work on the long distance propagation of short wavelength radar signals via ducts was greatly advanced during the Second World War and is published in [4]. Since 1950, many experiments have also been conducted on line-of-sight microwave telecommunications links by organizations such as Telstra, AT&T, British Telecom and Telia (Sweden) to determine how these links operate in the presence of ducts. The author has been involved in some of these microwave field experiments since 1982.

After about 1950, radio amateurs also began to conduct regular propagation experiments at VHF frequencies. An excellent review of some of this work is given by Howse [5].

From the short distance microwave propagation work conducted and extensive amateur observations it was evident to the author that many of the results could not be fully explained by the current theories of duct propagation and that a new approach was required. The development of some new concepts of VHF propagation via ducts reported here is an attempt to reconcile the observed results obtained from over 40 years of observations and measurements of VHF and microwave propagation in the lower atmosphere.

The amateur observations were started by the author in 1962, with observations

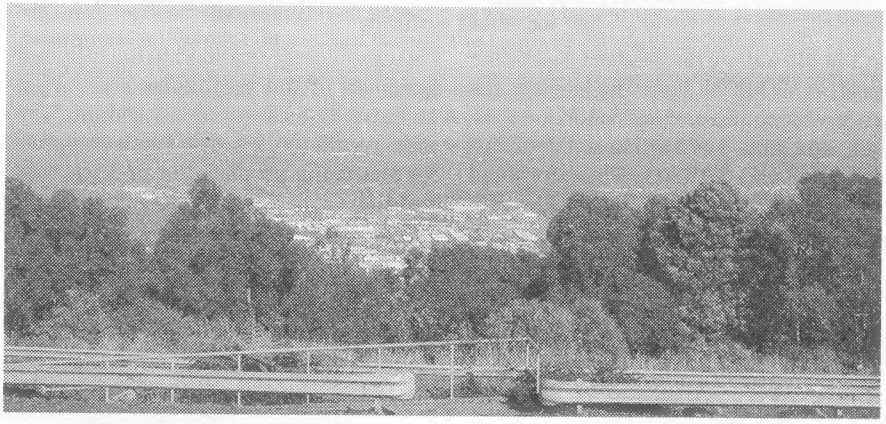

Figure 1. 620 m duct formed by subsidence in a high-pressure viewed from Mt Dandenong Victoria, 0Z 21 Dec 2002. In the original photo it is possible to see the slight wavy top of the duct that is most likely caused by internal gravity waves and wind shear induced instability.

Figure 2. Surface duct formed due to radiation cooling over land, 6 am local time.

Figure 3. Evaporative duct over water where the distant shore line appears to be extended vertically.

on 144 MHz along the Western Australian coast, as VK6ZCN. From the late 70s, the work was continued in Victoria on 50, 144, 432 and 1296 MHz as VK3YLR and later as VK3KAQ. This involved many VHF contacts to VK7, VK5, VK6 and ZL together with a great many observations from other amateurs such as those reported by Howse [5]. From the early 1980s, the author worked at the Telecom Research Laboratories on microwave propagation and developing line-of-sight system design processes. Many papers were published about this work and several of the ideas developed in these papers were the direct result of observations of propagation behaviour at amateur frequencies. The author is very grateful to the amateur community for making the amateur observations possible.

The new concepts of propagation via ducts that this paper is based on have been developed by the author over several years [6,7] to overcome the inability of existing theory to explain all the observed effects, in particular the duct entry and exit effects.

Early duct propagation theory is based on geometric optics and is well summarised in [3]. This theory is unable to offer a complete explanation of all the observed duct propagation effects, in particular the widely observed frequency dependent effects. In his review of the mechanisms involved in duct propagation Howse [5] also found clear problems contained in the different concepts of the mechanisms involved in entry to and exit from a duct. The most recent work to develop techniques for analyzing propagation in ducts was published in 2004 by Isaakidis and Xenos [8]. This work used finite element methods to solve the parabolic equations used to describe propagation in a duct. It successfully describes the propagation in a surface duct but does not address the issue of propagation in elevated ducts or the problem of the radio wave entry or exit from a duct.

There are many widely held views about the nature of ducts, some of these views are based on opinion, some on science and some on hearsay. This paper demonstrates that:

- Elevated ducts DO NOT fall to become surface ducts.
- Surface ducts DO NOT rise to become elevated ducts.
- Ducts DO NOT act as a wave-guide (from geometric optics theory of duct propagation).
- Ducts ARE frequency dependent.
- Coupling into the duct is along its WHOLE LENGTH.
- The antennas DO NOT have to be in the duct but it helps.
- Evaporative ducts occur ONLY over water.
- Radiation cooling ducts occur ONLY over land.

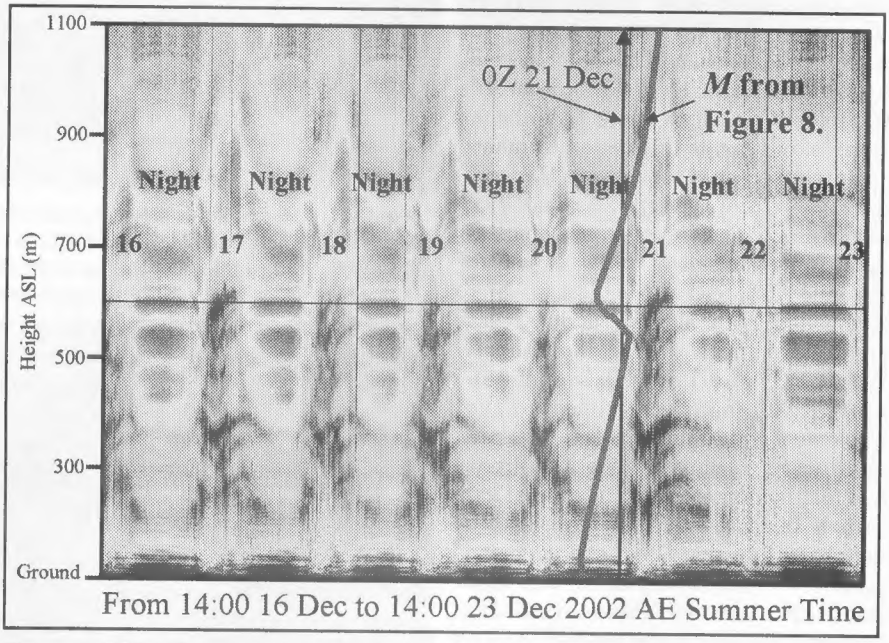

Figure 4. SODAR observations to a height of 1100 m ASL over seven days, made at Mulgrave, Victoria, Australia, December 2002. Red areas are highest signal return and blue areas are lowest signal return. A strong elevated duct is evident at 600 m for seven nights where the amplitude of the return SODAR signal is highest. The corresponding M profile from Figure 8 for 0Z on 21 Dec 2002 is also shown. The calculated M profile corresponds well with the highest SODAR signal level. The elevated duct clearly forms during the night and breaks up during the day due to the effects of rising plumes from ground heating. Ground level is at 100 m. 3895 measurements with 2 m vertical resolution. (We could not print the full colour picture of Figure 4 and 5 . The editor can email colour images on request.)

There are of course many more ideas that could be added but do not pass even basic tests so these are left out.

Formation of ducts in Australia

Howse [5] provides an excellent summary of the ducts that form in high-pressure systems and from sea breeze effects. By way of summary, some of the mechanisms that cause ducts to form are as follows:

- Subsidence (falling air) in high-pressure systems which causes a duct between about 400 m and 800 m to form over great distances along the coastal regions of Western, Southern and Eastern Australia including the Tasman Sea in summer. In winter and spring, weaker ducts are evident in the coastal regions at around 300 m. Subsidence ducts can also form over large regions of inland Australia between 1000 m and 1800 m from autumn to spring.
- Sea breeze ducts form where the cooler sea breeze meets a warmer off-land breeze. Sea breeze effects can also result in ducts at the top of escarpments such as along the Great Australian Bight near Eucla and along the Queensland coast. These ducts form where the warmer off-land breeze meets a cooler sea breeze at the edge of an escarpment, such ducts have been observed by the author to cause extreme refractive gradients that affect microwave propagation.
- Surface ducts form where the ground cools by radiation forming a cool layer close to the ground leaving warmer air above it. Such ducts are usually less than 20 m thick and are visible as a fog layer close to the ground. They form at night and break up after sunrise when heating of the ground reverses the process that formed the duct.
- Frontal ducts form where a wedge of cold air pushes under warm air to form a duct. These ducts may be several hundred km in length along the weather front and are locally short lived.
- Evaporative ducts form over water where the cooling near the surface from evaporation results in cool air

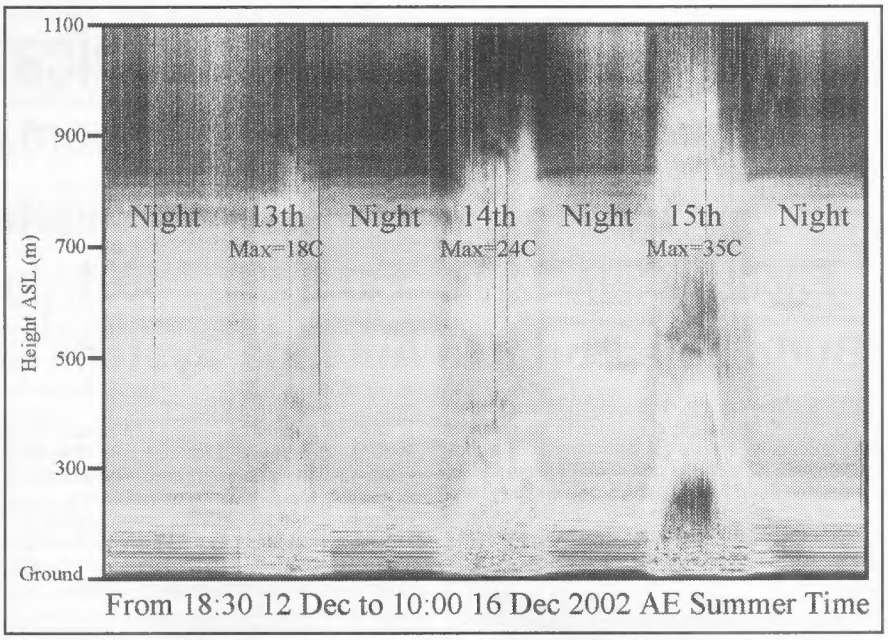

Figure 5. SODAR observations to a height of 1100 m over three days. A ground based temperature inversion is evident during the night to a height of 200 m ASL (100 m above ground). During the day, the plumes of rising warmer air break up the ground inversion. The daytime maximum temperatures are shown, higher maximums cause the ground inversion to be driven higher. A weak duct is evident at around 600 m. Blue areas represent lower humidity. 1400 measurements with 2 m vertical resolution.

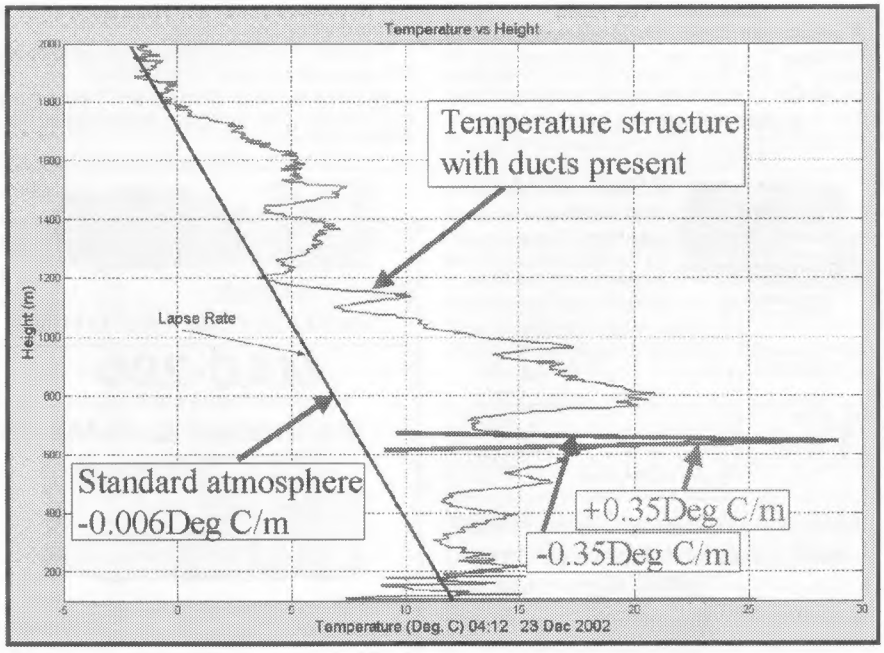

Figure 6. Vertical virtual temperature measurement with a duct present and the "normal" temperature lapse rate of –0.006 Degrees C/m shown as a solid line. This result is calculated from several SODAR return signal level results and illustrates the increase in temperature with height up to 800 m with several dramatic variations along the way. Maximum temperature gradient is close to 0.35 Degrees C/m with temperature changes of 7 degrees over just 20 m. Ground based ducts are also present.

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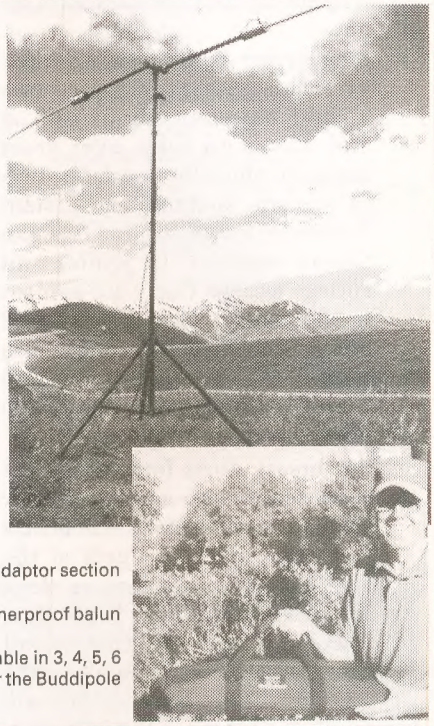

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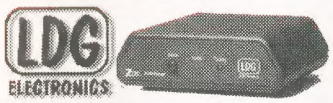

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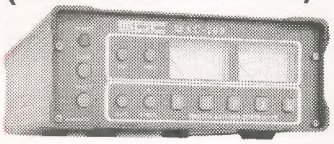

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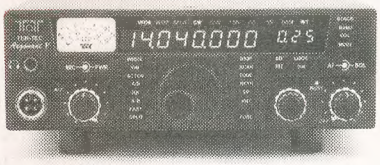

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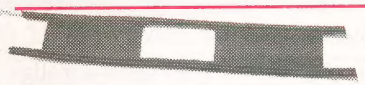

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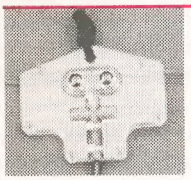

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below warm air and a temperature inversion.

Ducts or temperature inversions are readily evident through the atmosphere from visual observation. An elevated duct at 600 m is shown in Figure 1 and is the duct most often present in South Eastern Australia when long distance VHF propagation is observed towards the West in summer. Close inspection of the original photo used for Figure 1 reveals that the surface of the duct has a wave like structure.

Visual observations of ducts

Propagation via the 600 m duct can be stopped by high intervening terrain such as the Grampians in Western Victoria. Howse [5] comments on this terrain blocking effect noting that "the roughly East West valley between the end of the Great Dividing Range and the Otway Ranges may preserve the far end of the duct". In autumn and spring, high-pressure systems often sit over the mainland and have ducts at around 1400 m, such ducts enabling contacts between NSW and SA. Elevated ducts become weaker in the daytime and re-establish in the early evening.

Radiosonde data taken at various locations around Australia every 12 hours can be used to estimate the position of elevated ducts such as shown in Figures 8 and 13. Although the radiosonde flight times are not always optimum from a propagation point of view they provide a valuable indication of the long distance duct propagation conditions.

A surface duct formed by cooling of the air close to the ground is shown in Figure 2. Such surface ducts are generally between 3 m and 5 m high. Signals can be trapped by the surface duct and propagate along the ground until the duct dissipates or until a blocking object is encountered such as a line of trees or a hill. Signals can also be refracted from the top of a surface duct. Surface ducts break up after sunrise from heating of the ground and rise to dissipate between 50 m and 300 m above ground, Figure 5.

An evaporative duct is shown in Figure 3. Signals can propagate along the surface of the water in an evaporative duct. These ducts can be present for days at a time. Evaporative ducts can act as an RF mirror (and sometimes an optical mirror) and reflect signals from the top of the duct.

Ducts can be easily located by visual observation especially if the observation is close to the height of the duct as shown in Figures 1, 2 and 3.

Observed characteristics

The data used to draw conclusions about the characteristics of ducts was obtained from three different observation methods:

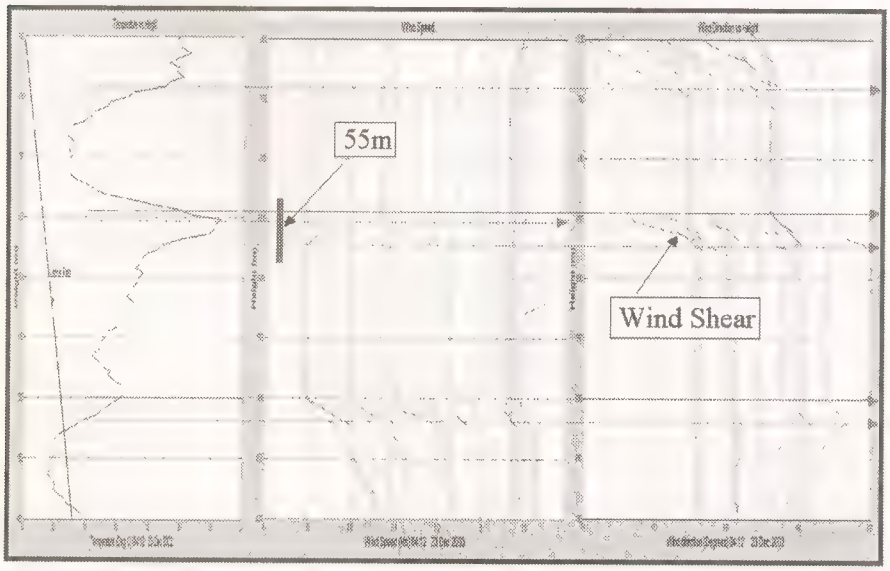

Figure 7. SODAR observation of the vertical structure of an elevated duct showing detail including wind speed and direction. There are two ducts evident, a weak one between 480 m and 500 m and a strong one between 630 m and 685 m. Changes in wind speed and direction are directly associated with the ducts.

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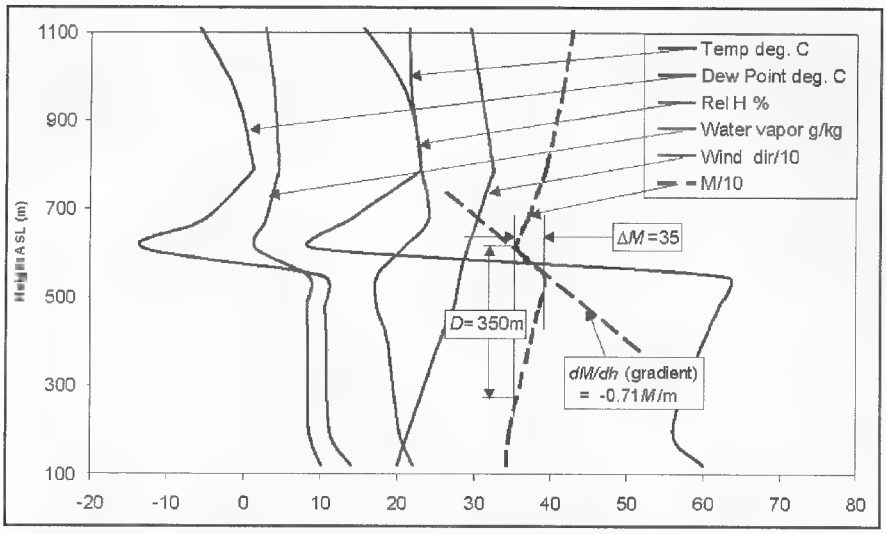

Figure 8. Radiosonde temperature, dew point, humidity, water vapour content, wind direction (divided by 10) and calculated *M* profile (divided by 10) showing an elevated duct at 600 m due to subsidence in a high-pressure system, Melbourne 0Z 21 Dec 2002, from [15]. The depth of the duct is 350 m, the gradient of the *M* profile in the duct is –0.71 *M*/m and the maximum *M* difference is 35 *M* units. (We could not print the full colour picture of Figure 8 . The editor can email colour images on request.)

- An acoustic pulse compression SOund Detection And Ranging (SODAR) system for obtaining high resolution vertical profiles of the atmosphere up to 2 km recently developed by the author [9,10].
- A large number of amateur radio contacts by the author in Western Australia and Victoria on the bands from 50 MHz to 1296 MHz plus the observations of many other amateurs. This work and the work of McAllister and Baker in conducting long term measurements between Albany and Salisbury is discussed by Howse [5].
- Professional work by the author on design and optimisation methods for fixed microwave radio links in the commercial bands below 10 GHz operating over distances of 30 km to 165 km.

The amateur radio observations led to numerous effects being observed during long distance propagation via ducts; most of these are listed below:

- Propagation distances of over 2000 km have been observed on all amateur bands from 144 MHz to 10 GHz.
- Ducts vary in their ability to transport signals, "weak" ducts may only propagate up to 144 MHz while "strong" ducts may sometimes propagate 10 GHz signals.
- As ducts become stronger and transport higher frequencies the lower frequencies seem to become weaker.
- Stations often report being "passed over" by the duct and hear nothing while stations at greater distances can work via the duct.
- Ducts can terminate abruptly with stations only 30 km further on hearing little or nothing.
- Ducts form in the evening and break up in the late morning but sometimes remain through the day although weaker than at night.
- Excellent ducts are present in Southern Australia from about December to March and over inland Australia from about March to October.

The professional observations lead to several other effects being observed on microwave paths of 30 km to 165 km:

- Extreme elevated ducts at a given location are always close to the same height at a given time of the year.
- The elevated ducts form in the late evening, are strongest around 6 am local time and break up in the late morning.
- Elevated ducts interact with microwave signals by refraction through the duct and/or propagation along the duct.
- Surface ducts formed by radiation cooling can be extreme and form a highly reflective layer close to the ground (for microwave signals).
- Surface ducts can propagate signals along the ground until they reach an obstruction.
- Surface ducts break up due to heating of the ground after sunrise.
- Very strong elevated ducts occur in Southern Australia in summer and in the more Northern parts of Australia in winter.
- The k-factor or sub-refraction fading [11,12] does not happen at all except in or very close to a duct. The k-factor of the gross atmosphere is 4/3 at all times. All of the effects attributed to k-factor fading can be more correctly explained by the effects of surface ducts [13]. The data in [13] presents a very strong case for surface ducts with a short multi-path delay being the cause of so called 'flat fading" on microwave paths and not the widely accepted k-factor. The argument over this new model for describing flat fading on microwave links [13] is still very current in spite of the strong evidence for it.

SODAR measurements

A pulse-compression SODAR measurement of the lower atmosphere to a height of 1100 m ASL for a period of seven days during a ducting event is shown in Figure 4 [9,10].

The measurements shown in Figures 4 and 5 are of the return signal level that is indicative of the vertical refractivity. Ducts are clearly indicated by the highest signal levels in red. Blue areas represent low refractivity and low humidity from low signal levels. The highest signal levels correspond well with the calculated M profile from a radiosonde measurement.

The position of the elevated duct at close to 600 m does not change at night over a period of seven days. During this time, several high-pressure systems passed with central pressures from 1019 hPa to 1030 hPa indicating that the position of the 600 m elevated duct does not change with the evolution of the high-pressure systems.

Several SODAR returns are averaged in Figure 6 to show the estimated virtual temperature structure. This gives a more

detailed look at the structure of ducts and shows that the vertical structure is very complex in contrast to low resolution radiosonde measurements such as those of Figure 8. The radiosonde measurements are, relatively speaking, low resolution because the sampling rate of the sensors is low and the rate of climb of the balloon is high so that only a few measurements are possible in the first 1000 m of the atmosphere. Figure 6 also shows very high temperature gradients within ducts. It is these gradients that create highly refractive layers.

The SODAR system also provides very high resolution measurements of wind. Several wind profiles through an elevated duct are shown in Figure 7. This data clearly shows the change in wind direction associated with an elevated duct. The internal gravity waves and the wind shear induced instability associated with the change in wind direction causes the surface of the duct to have a wave like structure in a similar way that wind over water can roughen the water surface [14].

The SODAR measurements were conducted over the summer 2002-3 at Mulgrave, Victoria from which the following observations were made:

- Elevated ducts form at a given height and break up at that height, they do not fall to become surface ducts.
- Strong ducts are present in the night and if present during the day are much weaker.
- Vertical duct structure is much more complex than shown by radiosonde measurements.
- An elevated duct can have several structures present in it, ducts within ducts.
- Several duct structures can be present at the same time including elevated ducts and ground ducts.
- Ground ducts do rise during the day but not sufficiently to result in long distance propagation. They become much weaker due to the effects of rising plumes of air breaking up their structure.
- Wind shear is present across the surface of an elevated duct.

From the SODAR observations shown in Figures 4, 5, 6 and 7, several of the misunderstandings set out above can be readily dismissed. In particular;

- Elevated ducts remain elevated, they form and break up at a given height.
- Ground ducts do rise after sunrise and then break up from thermal plumes that disrupt the duct during the day. Ground ducts do not transform into an elevated duct.

to be continued next month

Acknowledgment

Tele-IP Limited is acknowledged for providing data from its StratoSonde SODAR for use in this paper [9]. The many contributions from other amateurs by way of observations and just being there to make a contact are also acknowledged.

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Part 2 of this article, including Figures 9 – 20, will be published in the July edition of *Amateur Radio*

Jack Files Contest 2005

2 July 2005 (details on page 42)

Using the HP 8405A vector voltmeter

Richard Sawday VK5ZLR

In May 1966 HP released their 8405A Vector Voltmeter, which can measure the amplitude and phase of two RF signals anywhere between 1MHz and 1GHz, and do it with considerable accuracy. These units were manufactured for well over 20 years, and are by no means obsolete.

Using the Vector Volt Meter (VVM) and a signal source, you can determine the, Impedance, Reactance, Resistance, Reflection Coefficent, VSWR, Gain, Phase Shift and Return Loss of a transmission line, antenna, filter, amplifier, load or other RF component. Figure 1 shows the set up and Figure 2 the VSWR measurementAlso you can calibrate Rubidium standards, measure RF leakage and determine antenna radiation patterns with an 8405A.

Now this is one powerful tool !!

So when I was fortunate enough to acquire an 8405A there was great enthusiasm to reveal the secrets of all my antennas and cables. However I was not best pleased when my new VVM didn't work, the reason why became immediately apparent. Someone had removed the probe circuit boards. Needless to say replacements are unobtainable.

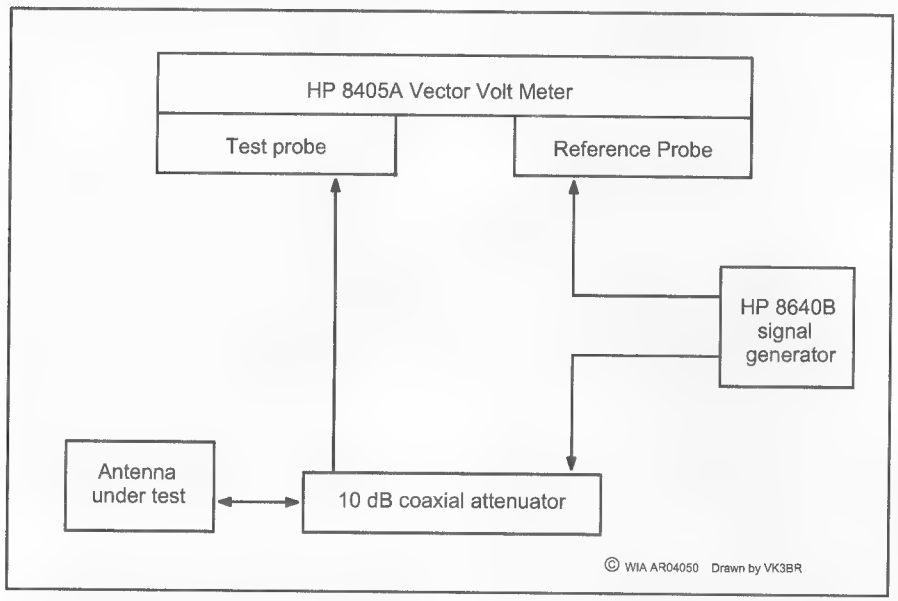

Figure 1. Test set-up using HP8405A to determine antenna feed point characteristics. Arrows indicate signal flow.

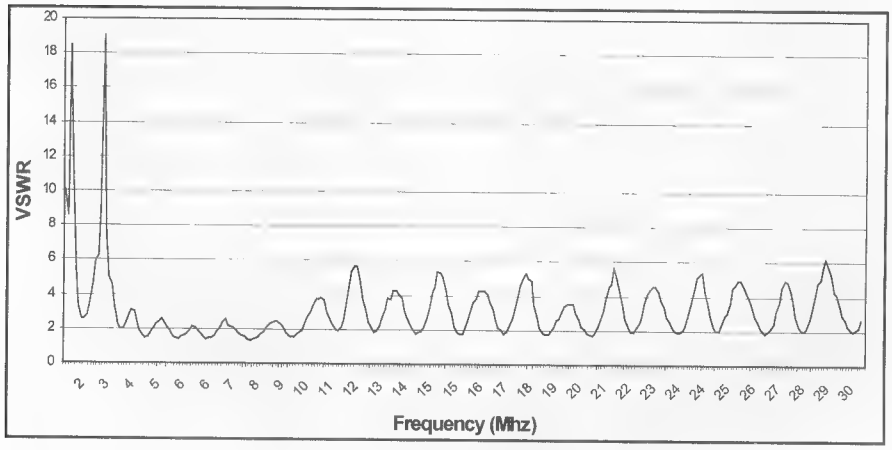

Figure 2. Aerial VSWR measurement

The probes are about the same size as a biro, and the probe circuit board fits inside. Remanufacturing this board, given the space constraints did not seem practical, so with a pair of garden secateurs I severed both probes, and set out to make new ones from scratch.

The manual doesn't give component types for the FETs and hot carrier diodes in the probe, so with nothing else to go on, the components were selected by guesswork.

One 2SJ74 P-channel FET and four over-the-counter Schottky diodes seemed to be about right. The probes are actually a sampling gate, so the frequency response of the components probably doesn't need to be much more than a few MHz, even when testing RF signals of hundreds of MHz.

Two prototype probes were breadboarded, and after several attempts, to my absolute astonishment, it actually worked. So, a pair of small metal RF-proof boxes was purchased and the circuit was rebuilt inside them using copper backed Veroboard. At this point it failed completely and would not work at all.

Here followed many days of frustration. The problem turned out to be the stray capacitance between the copper tracks on the Veroboard. So the probes were rebuilt again using the rats-nest technique and squeezed into the small metal boxes, with very satisfactory results.

Now having the unit working, it had to earn its keep. Out on the antenna farm there is an HF antenna, that for want of a better description might best be described as a Biconical Monopole. There has been some speculation about what this antenna might look like in

Spotlight on SWLing

Robin Harwood VK7RH

Winter is officially here and I have noticed that daytime propagation is considerably better than the nighttime. This is normal, but what is different this year is that, with the disappearance due to budgetary cutbacks by some of the major broadcasters, some smaller stations are beginning to appear.

The utility allocations remain as congested as they have always been but this increasingly seems to be from illegal or pirate operations. The major users have either switched to satellite or are employing extremely sophisticated digital modes. Many of these illegal activities have been straying into our exclusive amateur allocations for decades and are now finding vacant frequencies also in broadcasting, aeronautical and other utility allocations.

Unusual station

The sunspot numbers have decreased and the higher frequencies are not propagating that well so there is increased activity on the lower channels. One unusual station I did come across was the Israeli Defence Force broadcasting network on 6973 around 2100. It is in Hebrew and it is on this channel to cover up some dead spots within Israel that are missed on FM or AM. 6973 is broadcasting on USB with carrier and reception is best on AM.

The major Kol Israel network is again scheduled to quit HF this month but have we not heard this so often in the past that we will only believe it if it indeed disappears. There has been an ongoing power struggle for the control of this organisation with the director-general being sacked recently.

Arabs still on air

The English Service of United Arab Radio from Dubai also has disappeared. This was easily heard in our local afternoons on 17 or 21 MHz. However the Emirates have not completely disappeared as the Merlin operated HF site in Abu Dhabi (also referred to as Dhabbiyah) continues for a variety of programmers and broadcasters.

75th anniversary of FM

This month happens to be the 75th anniversary of the invention of frequency modulation. Major Edwin Armstrong invented and developed this in 1930 and eventually commenced experimental broadcasts with it from a site in New Jersey. The tower is still there and is in use, particularly after September 11th,

When the Twin Towers went down. I did get an email telling me of the date and time for the anniversary and that permission had been obtained from the FCC to once again utilise the 41 to 42 MHz band to recreate this. I believe it will be in mid June and will also be streamed on the Internet. Armstrong had a long legal battle to get recognition for his invention of FM and he never won the patent right in his lifetime. He became so depressed that he committed suicide in 1954. His widow took up the battle and it was many years after this that the long legal fight was successful.

A death in the family

My Pentium 75 has finally given up the ghost after undergoing several upgrades. Next month I will be writing this column on a totally new system which hopefully will no longer lock up with the dreaded blue screens and crash. I will also eventually go on broadband with ADSL because I find that downloading via dialup is slower but wonder if the ADSL modem will significantly interfere with my monitoring. I will turn it off if that transpires.

DXtuners

Fred VK3AQN, recently emailed me with his comments on Echolink and also on a system in Florida to remotely operate a station on HF. It does sound interesting but I am personally wary of doing that because of the legal ramifications. I am presently happy with being able to remotely operate receivers via the Internet. These are known as Dxtuners and were formerly known as Javoradio.

Well that is all for this month. Don't forget you can email me your comments at vk7rh@wia.org.au. 73 de VK7RH.

Using the HP 8405A vector voltmeter *continued*

terms of its VSWR, now the question has been answered, using the 8405A, an HP8640B as a signal source and an Excel spreadsheet to calculate and graph the results.

The Mathematics involved in translating a voltage and phase reading off the Vector Volt-Meter into VSWR is quite complex, however I have created a small Excel spreadsheet to handle all this, I would be happy to email it to anyone interested. My email is rsawday@bigpond.com.au.

Photo 1 - The HP 8405A Vector Voltmeter

Unravelling the mysteries of connecting radios to antennas ~ *Part 3*

The VSWR head and interference considerations

Brian Clarke, VK2GCE
brianclarke01@optusnet.com.au

The VSWR head

What is the function of the VSWR head? It provides signals proportional to the forward and return RF voltages at the point it is monitoring on a TL These signals are fed to a circuit that drives an indicator, often an analog meter. If there is no return voltage, the meter should indicate a VSWR of 1:1. If the return voltage is half the forward voltage, the VSWR is 3:1. If you look at the meter scale of any analog VSWR meter, you will see that the 3:1 point is at one-half FSD. The meter and its drive circuitry need not be at the same place as the VSWR head.

The important question is: what does the VSWR head tell us? It should be used to provide the signals that let us know how well our antenna is matched to its feeder. Of course, it can be used to measure VSWR at any point along the RF transmission chain, but the VSWR at the antenna feed point is the one that really matters.

VSWR head placement

It is commonly believed that, whether the output of a TL is connected to its characteristic impedance or not, the ratio (VSWR) of high to low voltages will be the same at all points along the TL. These highs and lows are created by the interaction of the forward and reflected RF waves as they travel along the line.

Suppose we have a multi-frequency dipole antenna that we use for all the HF frequencies at which our transceiver can operate. Say we have a 100 feet long TL consisting of RG-58 coaxial cable. In the 6 m band, the loss in 100 feet of RG-58 is about 3.5 dB. Now if the VSWR at the antenna feed point is 5.8:1, what would the VSWR meter read if the VSWR head were at the transceiver end of the TL?

Assume that we have a power level of P_I fed into the transceiver end of the TL. The power at the antenna end is P_I less 3.5 dB. Because the VSWR is 5.8:1 at the antenna, the power fed back down the TL is (P_I less 3.5 dB) x 50 %; ie, P_I less 6.5 dB. Then the reflected power is reduced by a further 3.5 dB as it travels back down the cable, so at the transceiver end, the return power is P_I less 10 dB. Thus, the ratio of forward to return power is 10 dB (ie, $P_{FWD} / P_{RET} = 10$) at the transceiver end. What will the VSWR meter display?

Knowing that $P = V^2 / R$, and assuming that the TL has a constant impedance, we can say that

P is proportional to V^2; so, V_{FWD} will be $\sqrt{10}$ times $V_{RET} = 3.163 * V_{RET}$.

Now VSWR = $(V_f+V_r) / (V_f-V_r)$
$= (V_f/V_r+1) / (V_f/V_r - 1)$

Substituting the voltage ratio calculated above, we get a VSWR of (3.163 + 1)/(3.163 – 1) or about 1.9:1, which is somewhat different from the 5.8:1 at the antenna feed point. And worse, we would probably accept a VSWR of 1.9:1 and start operating.

Therefore, the best place for the VSWR head is at the antenna feed point.

Now suppose we are using the same TL with 3.5 dB loss, feeding an antenna with VSWR = 3:1, and we want to deliver 100 W into the antenna feed point. To what output level must we crank up our transceiver? 100 W + 3.5 dB = 224 W. And as there is a 3:1 VSWR at the feed point, what is the maximum voltage on the TL? Let's assume that the 3:1 VSWR at the antenna feed point is caused by the antenna impedance of 150 Ω. The 100 W of power fed into 150 Ω will develop 122 V. By similar calculations (224 W fed into 50 Ω) the voltage at the transceiver end is 106 V. These voltages are OK for RG-58 cable – but if you had been running 400 W input to the antenna, and the VSWR had been 10:1, the voltage at the antenna end would have been about 450 V. That's still OK for RG-58 in dry weather, but let the coaxial cable fray a bit, and the humidity rise . . .

Most simple VSWR heads detect the TL voltage. Two samples are taken, one of the forward-going wave and one of the return wave. In a good VSWR head, each sample will discriminate against the voltage in the opposite direction by about 40 dB. In some store-bought models, the display circuitry reads voltage as though the line impedance were 50 Ω. If the VSWR head is at the antenna feed point and the antenna impedance is other than 50 Ω, this will mean that the actual voltage readings will be inaccurate. However, the forward and return voltages will be inaccurate in the same ratio; consequently, the VSWR displayed will still be correct, within the limits of that particular design.

I have suggested that the VSWR head should be at the antenna feed point. However, most store-bought VSWR heads are designed for unbalanced line measurements. Such VSWR heads are best used for metering with unbalanced antennas. If you have a balanced antenna, you will have difficulty finding store-bought VSWR heads to suit. But the keen experimenter can find designs for roll-your-own balanced-line VSWR heads.

Interference generated by the VSWR circuitry

Most VSWR circuitry uses diodes in series with the analog meter to produce a dc voltage. In order to be sensitive to very small return voltages, these are usually germanium or Schottky diodes, which require a forward bias of about 0.2 V for conduction. When we monitor 100 W forward power into 50 Ω, the through-

line voltage is 71 V. With such voltages, commutation noise is likely to be about –50 dBc. Could this be a problem?

The current Australian Communications Authority regulations under which we operate state that the maximum spurious content of our HF transmissions must not exceed –43 dBc – 10 log (W_{PEP}) or a maximum of –50 dBc, whichever is less stringent.

For all other emissions, the limit is –43 dBc – log P or –70 dBc; again, whichever is less stringent. So, feeding 100 W, or even less, into our antenna and past our VSWR head may generate spurious emissions greater than –50 dBc, which would contravene the regulations.

The signal from the commutating diodes is at –31 dBW inside the VSWR head. If the VSWR head is at the antenna feed point, this signal is transmitted to the antenna via about 35 dB of isolation. The isolation is provided by the spacing of the lines L1 and L2 from the through-line input – see Figure 8. Shielding of the VSWR head will have little effect – we are looking at a conduction effect rather than a radiation one.

This spurious signal will be just detectable at the –137 dBW level (1 µV into 50 Ω) at 10 MHz, if the receiving antenna is 6 km away in a straight line. This maximum distance is based on an estimate of the free-space transmission loss between similar antennas (RadCom Handbook, 1982:11.6) and the detailed calculations are given in Appendix 1. Typically, such an interfering signal will be picked up by most receivers out to the horizon on the ground-wave, but there will be no sky-wave by refraction from the ionosphere. The higher harmonics of a 10 MHz signal will be attenuated more severely and so will become undetectable at shorter distances. For instance, the 5th harmonic (6m band) commutation signal will be just detectable at 2.7 km. What about the 20th harmonic, falling within the TV broadcast bands? Here, the required sensitivity is 1 mV into 75 Ω; ie, –79 dBW, and the distance for a just-detectable signal is less than a metre – therefore, only TV sets in your own home may possibly suffer interference.

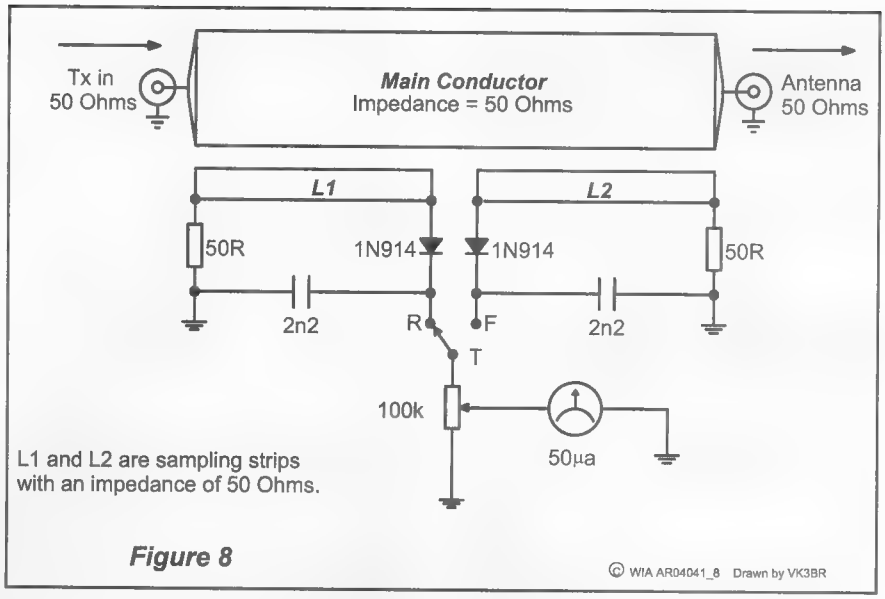

Fig 8 – A typical VSWR meter.

These figures demonstrate that, once you have adjusted your ACU, there could be a case for disconnecting the VSWR meter drive circuitry that contains the diode(s). This would reduce the spurious emissions when you transmit and the risk of noise generated by irate neighbours. Reducing the power into your antenna has little effect on this spurious signal generation until the diodes are no longer commutating. Even if the whole VSWR meter is at the transceiver end, the TL losses affect these calculations by perhaps 3 dB at most.

Note: the figures derived in this section are really worst case for a particular kind of VSWR head and display circuitry. See Appendix 1 for details of the calculations and the assumptions made. If your VSWR head uses diodes connected directly to the through-line, your situation is far worse – refracted sky-waves could cause interference hundreds of kilometres away.

The voltages present during reception are so small that the diodes will not be switching and no noise will be generated. So, the VSWR head can be left in circuit during reception with no deleterious effects. However, this problem of diode commutation noise is crying out for a creative solution, particularly if the diode circuitry is at the antenna feed point; perhaps we need to go back to thermocouples? Alternatively, look again at Figure 8 to see a possible solution when the indicator is remote from the VSWR head.

Appendix 1

Radiated interference from a typical VSWR head

Calculation of free space power transmission

$P_{RX} = P_{TX} + G_{AETX} + G_{AERX} - L_{FS}$

where

P_{RX} = power of signal at receive antenna feed point

P_{TX} = transmitter power fed to antenna feed point

G_{AETX} = gain of transmit antenna

G_{AERX} = gain of receive antenna

L_{FS} = free space loss
= 32.45 + 20 log f (MHz) + 20 log distance (km)

Note: All figures are in dB format. Power levels are usually referred to 1 W; ie, dBW.

A more complete rendition of this equation would take feed-line losses into account, thus:

$P_{RX} = P_{TX} + G_{AETX} - L_{TXFL} + G_{AERX} - L_{RXFL} - L_{FS}$

Example

This example considers possible interference caused by spurious signals that will be generated by diodes in the VSWR head – if they are left in circuit during transmission. It expands on the earlier discussion under the heading, "Interference generated by the VSWR circuitry".

Scenario assumptions:

a. the VSWR head uses germanium

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log periodic 8 ele 13-51 MHz 5.5 m boom	$783
40 m linear loaded 2 ele beam	$595
M B vert auto switch 10/80 m	$330
6 m 5 ele comptr opt beam	$268
Top loaded 160 m vert	$430
10 ele high gain 2m 3.9 m boom	$145
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diodes, with a forward commutating bias requirement of 0.2 V, and fed by a 50 Ω TL type pick-up

b. the transmitting antenna has 0 dB gain in the direction of the receiving antenna
c. the receiving antenna has 0 dB gain in the direction of the transmitting antenna
d. the receiving antenna feed-line has zero loss
e. the main transmit power is 100 W, measured by the VSWR head at the antenna feed-point
f. the amateur HF receiver sensitivity is 1 µV into 50 Ω; ie, power level of –137 dBW (Case 1)
g. the TV receiver sensitivity is 1 mV into 75 Ω; ie, power level of –79 dBW (Case 2)
h. the isolation L_{PU} between the main TL and the pick-ups in the VSWR head is 35 dB

Using these simplifying assumptions, the free space power equation becomes

$P_{RX} = P_{TX} - L_{PU} - L_{FS}$

where:

P_{TX} = the power level of the spurious signal generated by the diodes

L_{PU} = the isolation in the VSWR head between the main line and the TL pickups.

The peak RF voltage at the diode spurious-generator is 0.2 V, ie, an RMS value of 141 mV, and this appears across the 50 Ω pick-up TL.

So $P_{TX} = (0.141)^2 / 50 = 0.4$ mW or – 34 dBW.

Case 1

Find the minimum free-space loss which will just prevent interference to the amateur HF receiver, when the spurious signal is around 10 MHz.

The simplified free-space equation becomes:

$-137 = -34 - 35 - L_{FS}$

from which $L_{FS} = 68$ dB

As shown above, L_{FS} depends on frequency and distance

Now, what is the minimum line-of-sight distance to avoid interference?

Inserting values into the L_{FS} equation:

$68 = 32.45 + 20 \log (10) + 20 \log (km)$

So $20 \log (km) = 68 - 32.45 - 20 = 15.55$

Taking antilogs gives the minimum distance as 6 km.

At 10 MHz, on an antenna designed for a lower fundamental frequency, the polarisation is likely to be horizontal, so the signal will have a wide range of vertical radiation angles. For the lower angles of radiation, the interfering signal would be receivable as a ground wave out to the horizon. For the higher radiation angles it would have to be a refracted sky-wave; but then the transmission path length would far exceed 6 km, and there would be no interference.

If the antenna were vertical, its low-angle, omni-directional radiation pattern would be likely to cause interference out to a range of about 6 km in all directions.

Case 2

Find the minimum free-space loss which will just prevent interference to the TV receiver.

The simplified free-space transmission equation

$P_{RX} = P_{TX} - L_{PU} - L_{FS}$

becomes:

$-79 = -34 - 35 - L_{FS}$

from which

$L_{FS} = 10$ dB

Assume that the receiver is tuned to 200 MHz (TV ch. 9). What now is the minimum line-of-sight distance to avoid interference?

As before, the free-space loss depends on frequency and distance:

$L_{FS} = 32.45 + 20 \log f$ (MHz) + 20 log distance (km)

Inserting values into this equation:

$10 = 32.45 + 20 \log (200) + 20 \log (km)$

$= 32.45 + 46 + 20 \log (km)$

So $20 \log (km) = 10 - 32.45 - 46 = -68.45$

Taking antilogs gives the minimum distance as 0.000378 km or 378 mm.

This shows that, unless its antenna is situated adjacent to the source antenna, the TV receiver will suffer no interference, even on the lower frequencies such as 64 MHz (TV ch. 2).

Lessons

1. Try to work out a way to disconnect the diodes inside your VSWR head after you have tuned up.
2. Keep your transmitting antenna clear of your neighbour's TV antennas.

To be continued

Part 4 (final) of *Unravelling the mysteries of connecting radios to antennas* will appear in the July issue of *Amateur Radio*

VI5PN operation – a great success

Peter Forbes VK3QI

7220 contacts and 104 countries worked

Four Victorian hams, Peter VK3QI, Keith VK3FT, Max VK3WT and Jack VK3WWW, successfully activated St Peter Island. Nuyt's Archipelago, IOTA OC-220 off the coast from Ceduna in far west South Australia the weekend of the 8, 9, 10th April.

The team: Peter VK3QI, Keith VK3FT, Max VK3WT and Jack VK3WWW

After completing the 20 hour drive to Ceduna with equipment, water and fuel, the boat from Ceduna Boat Charters, a 7.5 metre Shark Cat was able to ferry them right to the operating site on the north west side of the island. Arriving at 10 am, and working in quite hot and sunny conditions, everything was setup and ready to go by 6 pm Thursday 7th.

Radio conditions were quite good over the ensuing 105 hours of operation, finishing at 6 am local time on Tuesday 12th April. Pack-up and departure is always quicker and the group were back in Ceduna by 11 am . After staying the night at Ceduna, to clean up and gain some well earned sleep, the group drove the 22 hour trip back to Melbourne arriving 5 am Thursday.

The two main operating positions were as follows: For SSB, a IC706 and a Emtron DX1 amplifier to a rotatable TH3MK3 beam mounted on a sand hill about 8 metres ASL. For CW, a FT100D and a Metron MA1000 amplifier to a Hy-Gain AV640, 40 to 6 metre vertical, actually mounted in the ocean.

All power was obtained from a Honda EU20i with two EU10i units as backup (but not needed).

A third setup, using an IC706 to a variety of wire dipoles on fibreglass support poles at 40 feet, was used mainly for VK contacts on 40, 80 and 160mx.

Weather conditions were fine for the entire time, but very hot and windy conditions on the Saturday tested out the group's capabilities at setting up tents and antennas that could withstand the 50 knot winds blowing from the north straight onto the beach where they were camped. Incidentally, at 41 degrees, Ceduna, some 16 kms north of the island had its hottest ever recorded April day. The dust over Ceduna could be seen from the island, but the particular problem on the island, was the high level of fine sand blown off the beach into the operating positions. Needless to say, with 4 island operation experiences under their belt now, the group were able to proceed with minimal interruption.

Now that the computerised logs have been completed, contact statistics can be announced.

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= 104 COUNTRIES

BANDS/ MODES	CW	SSB	TOTAL
10mx	347	242	589
12mx	244		244
15mx	720	579	1299
17mx	113	8	121
20mx	149	2288	2437
30mx	1980	1	1981
40mx	374	108	482
80mx	-	56	56
160mx	-	12	12
TOTAL	**3927**	**3294**	**7221**

CONTINENTS/ MODES	CW	SSB	TOTAL
AF	9	6	15
AN	2	-	2
AS	1484	828	2312
EU	1719	1895	3614
NA	636	244	880
OC	5	383	388
SA	9	6	15
TOTAL	**3927**	**3294**	**7221**

The camp site TH3 Mk3 and the wire dipoles

The special callsign was in honour of the 350th anniversary of the death of the Dutch explorer and VOC man, Pieter Nuyts, who died in 1655. Nuyts was present on 't Gulden Seepaert, captained by Francois Thijssen, which accidentally discovered the Australian south coast in 1627 on its way to Batavia, after being carried too far south by the strong westerlies.

For those in Australia who worked the group and wish a special commemorative qsl card, you may qsl via the VK3 buro or direct to VK3QI, QTHR.

Plan ahead

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http://users.ncable.com.au/gsyme/AlaraMeet/

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WIA Comment *continued*

The first year of a National WIA

the evolution of the Advisory Committees, and we are now addressing the need for better two-way communication with those Committees.

It now seems that our original prediction that our membership, with new members at least balancing those who have ceased to be members, will be correct and we will finish the first billing cycle with at least as many members as we started.

There is no doubt that the WIA has, in its first year faced more challenges and threats than anyone believed possible at the start of the year. I believe that the WIA has responded competently and, I hope, is perceived as the responsible and effective voice of Australian amateur radio.

Each of us who accepted a role on the board of the WIA after the adoption of the new Constitution just one year ago was very aware of the difficulties that we faced and the importance of somehow doing our best to persuade those who were unconvinced that the WIA could not merely perform as well as it had under its old federal structure, but could perform better.

I would like to think that we have succeeded.

Peter Gibson VK3AZL

A simple wind direction indicator

And now for something a little different. In the Dutch Amateur radio journal "Electron" for February 2005, Cees Spierenburg, PA3FXO describes a simple wind direction indicator.

Figure 1 shows the circuit of the indicator. It is divided into two halves. The head unit, which is mounted outside in a suitable place to accurately indicate the correct wind direction, and the indicator unit, which is installed inside were it can be seen. The left half of the circuit is the head unit whilst the right side of the circuit is the indoor display unit.

The circuit operates by feeding a stable voltage to a fixed voltage divider in the head end. Any 1 of 8 reed switches in the head end is selected by a magnet that rotates with the wind. Each reed selects one step on the voltage divider that is unique to each position as the shaft rotates. If the voltage increases with clockwise rotation, then the indoor display should be assembled in the same manner.

The LM3914 integrated circuit operates by taking a voltage as input and driving an array of up to 10 LEDs to represent the voltage level at its input. The actual voltage range as well as bar or dot display can be selected. In this case, the maximum voltage input will be 4.0Volts and R2 is adjusted such that when S8 is closed, the LED at pin 12 is lit. If S1 is then closed, the LED at pin 1 should be lit. This is the only adjustment necessary. Dot display is selected by leaving pin 9 open circuit.

The picture shows the construction of both ends, with emphasis on the head end. The unit in the centre is the heart of the head end. It consists of two circuit boards held apart by the eight reed switches and the shaft. The board at the bottom also contains the voltage divider. The rotating shaft is supported by ball bearings, which should be used to allow the unit to swing in light breezes. The individual reed switches are selected by a magnet attached to the rotating shaft. In the picture it appears that a magnet as used in security systems is used. The unit on the left is a piece of plastic tubing of suitable diameter with a suitable base. The switch unit is placed into the plastic tube and fixed by whatever manner desired. The hollow cylinder on the right is the lid that is mounted on the top to complete the weatherproofing. A suitable arrow assembly is fixed to the shaft at the top with the lid attached to that so that both rotate freely.

In contrast, the indoor display is built in a simple box with the driver on any suitable board mounted behind the display. As mentioned above, make sure that the display is wired so it rotates in the same direction as the head unit.

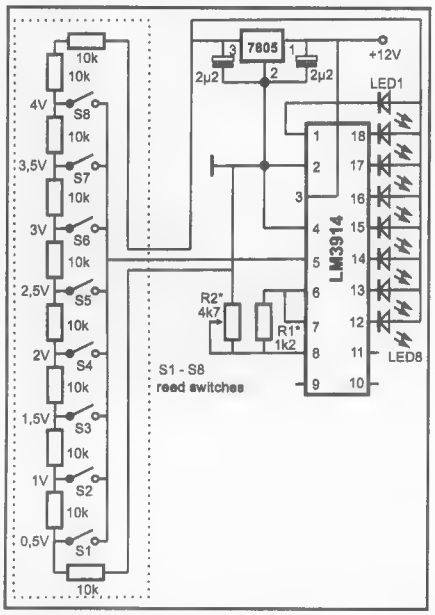

Figure 1 Schematic of wind direction indicator

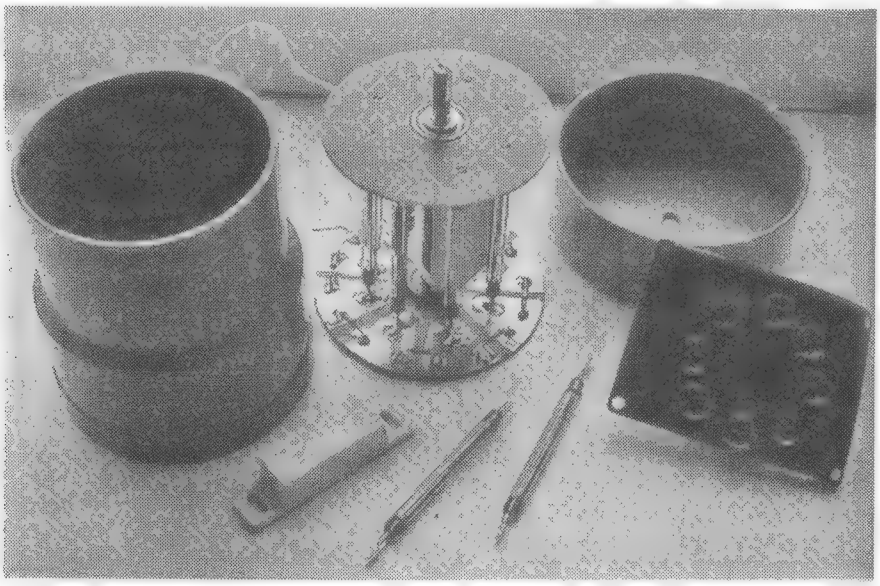

Photo 1.Construction of head end and indoor display

The North Queensland Amateur Radio Convention

16th, 17th and 18th September 2005

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Technical abstracts

Peter Gibson VK3AZL

Mounting Yagis

In CQ for November 2004, Kent Britain, WA5VJB in his "Antennas" column describes some of his findings regarding the mounting of Yagi antennas.

With the mast coming in at a 90-degree angle to the element, as you would find in a horizontally polarized antenna (Figure 2), gain variation was less than 0.1dB and that 0.1dB was when the mast was very close to an element. Gain variation was virtually undetectable when the mounting mast was placed between the elements.

What about end mounting a vertically polarized antennas? End mounting (Figure 3) also showed little variation. When the mast was very close to the reflector, it would detune the reflector element and some variation was noted.

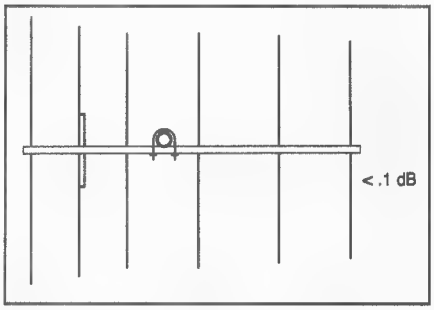

Figure 2. Horizontally mounting a Yagi

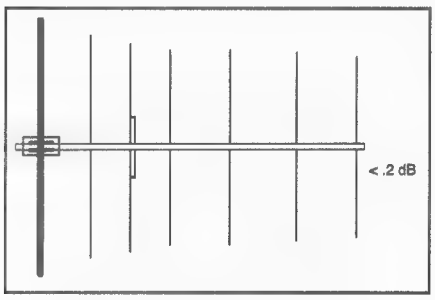

Figure 3. End mounting a Yagi

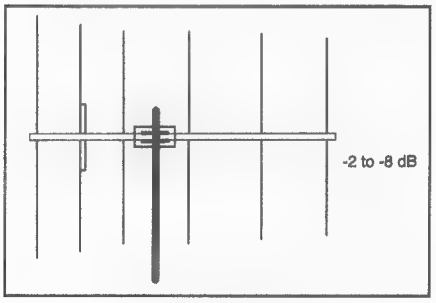

Figure 4. Mid mounting a Yagi on a short mast

There were also points at which the reflector and mast were ¼ and ½ wavelength apart, which showed some interaction, but variations were seldom even 0.2dB.

Mounting the mast through the antenna, but stopping at the boom (Figure 4), greatly detuned the antenna. As tested at different points along the mast, the gain change varied from –2dB to –8dB. The greatest dips were when the mast was close to an element. If you absolutely have to mount a Yagi this way, put the mast equidistant between two of the director elements, and as far as practical from the driven element. Leave just enough mast above the boom for the clamp to attach firmly, but no higher.

Mounting the mast completely through the antenna (Figure 5) completely messed it up, and again, having the mast close to an element showed the greatest loss in forward gain. Mount a Yagi this way, only when you have no choice, but don't expect good performance.

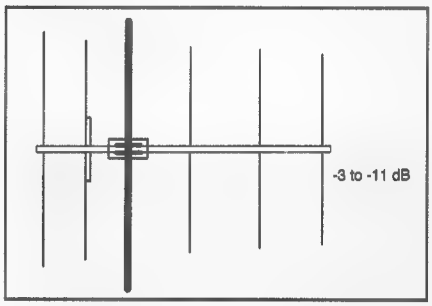

Figure 5. Mid mounting a Yagi

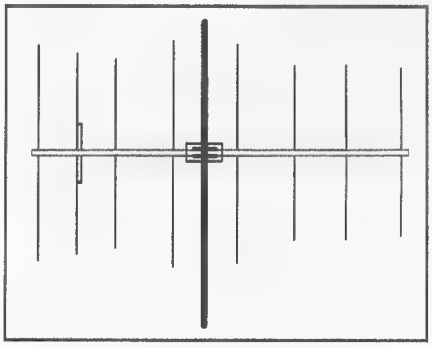

Figure 6. Electrical effects of a mast through a Yagi

It's not the mast itself, but the coupling effect to the Yagi elements that's the culprit. In a highly tuned Yagi, the element lengths are quite critical. The Yagi elements closest to the mast couple to the mast and are now much longer electrically, resulting in a Yagi that acts like the one shown in Figure 6. It should be possible to come up with a cut chart for a Yagi that says, " Trim elements 4 and 5, xx inches if vertically mounted through the mast".

What if you are going to be clever and use a non-conductive mast? A light antenna with a plastic or some expensive fibreglass rod can be used successfully.

continued on page 38

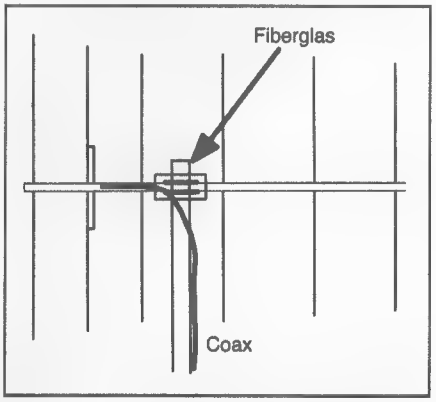

Figure 7. Using a nonconductive mast won't help if you run coax along it

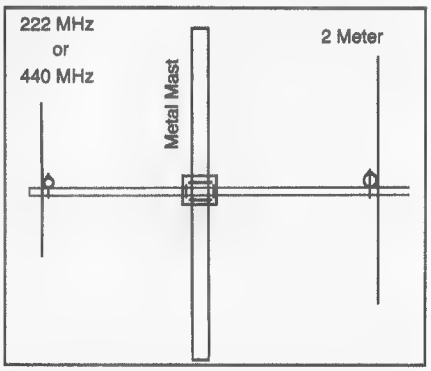

Figure 8. The best way to mount your vertically polarized Yagi(s) is by using an additional cross-boom to separate the antenna(s) from the mast

Ron Fisher VK3OM

The ICOM IC-730 HF transceiver

With comments on some other early Icom HF transceivers.

It's always nice to meet up with an old friend. In this case it is the Icom IC-730 transceiver. A few months ago I added one to my collection, and it brought back pleasant memories of an excellent rig I reviewed in *Amateur Radio* back in April 1982. It was about 23 years since I had seen and used one of these. It still stacks up surprisingly well

Icom equipment has always been different. Right from the earliest they have used fully synthesised frequency generation while other manufacturers were getting along with analogue VFOs. The first Icom was the IC-701, a marvel of electronic engineering, fully synthesised with an electric driven band switch. Most of them worked well, but a few suffered problems, probably due to poor quality control. Also, that electric motor driven band-switch gave problems after a few years of operation. Take care if you are tempted to purchase one.

The 701 was superseded by the IC-720, closely related to the 701 but with a full general coverage receiver. It still used a motor driven band-switch. By this time quality control had improved and it's still possible to hear a few on the amateur bands. Some sound good, others don't. Again, take care if you are tempted to buy one, but then this applies to any second-hand purchase.

The IC-730 was released on the local market in mid 1981, when quality control problems had been taken care of. My 730 has been serviced only once by Icom, back in 1991, for a minor problem. Since then it has been in continuous service, mainly on 20 metres. It is still performing right up to specifications.

A closer look at the IC-730

Let's look at the 730 in detail and see what it has to offer and how it compares with other contemporary transceivers.

There are two synthesised VFOs. Tuning speeds are selectable at 10 Hz, 100 Hz and 1 kHz steps, giving a tuning rate per knob revolution of 1 kHz, 10 kHz and 100 kHz. The two VFOs allow split frequency operation, although it is confined to the band in use. Still, most useful.

Next there is a memory. Just one, but as far as I know, the first on an HF transceiver. Actually, there is one on each band so it's better than you might think. We have come a long way, with 100 memories now being common.

With no mechanical gearing, the tuning is very smooth and free. Tension is adjustable if required. Band switching is now with a normal switch bank; the old motor driven switch is gone forever. A speech processor is included, as is an SWR meter. Very handy.

The rig covers all bands from 80 to 10 metres in switched 500 kHz segments. Unfortunately, as was common at that time, 160 metres was omitted. However, in addition to USB, LSB and CW, a useful AM facility is included with a proper AM 6 kHz filter. This produces excellent AM quality on both transmit and receive. Power output on SSB and CW is 100 watts with about a quarter of this on AM from the solid state final.

The IC-730 on the air

The general performance on air was excellent. One of the main advantages over its opposition was the great improvement in frequency stability. While it's probably not up to a new transceiver with a TCXO, I didn't notice any frequency drift that was in any way distracting. Compare that with other transceivers reviewed in this series.

The frequency display reads to 100 Hz and is bright and easy to see; however, with the RIT in use, it doesn't change its reading. A bit odd, but you get used to it.

An IF shift control is useful in reducing interference and can be changed to a band pass tuning system with the addition of an optional filter. I doubt that many original purchasers would have opted for this so you would be lucky to find one.

Last, but not least, the 730 has an excellent VOX. Listening around, I don't think many use VOX these days but it's there if you do.

A second hand IC-730 is fairly rare today. Perhaps they weren't popular when they came out, or perhaps those who have them hang on to them. The official Icom price on 14/1/1982 was a rather high $969. Today, I would value one at around $350. This should include an IC-HM7 microphone, a DC power lead and, of course, an instruction manual. It should be in clean condition.

The matching power supply was the IC-PS15, and the speaker the IC-SP3. PS15 power supplies are often in the second hand market, but SP3 speakers are seen more in 'wanted' than 'for sale'. A narrow CW filter was also available.

Next in this series I will be looking at RF power and SWR meters and misconceptions regarding them.

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Equipment review

Yaesu FT-857D, all mode, HF, VHF, UHF mobile transceiver

Eric Buggee VK3AX
Ron Fisher VK3OM

After a long gap, Amateur Radio magazine is back in the business of presenting reviews of new amateur radio equipment. We hope to present a selection of reviews of both transceivers and ancillary equipment on a regular basis. I am also very pleased to introduce a new member to our team, Eric Buggee VK3AX. Eric is well known to 160 metre operators. This is Eric's favourite band and he puts out a booming signal from his Emerald location which just happens to be up the road from me. He is also a "test equipment" afficionado. This means that if something is quoted as being -70 dB down, it isn't -71 dB down. Eric will, therefore, be doing all the technical tests. Over time you will be able to make exact comparisons between the gear we review. So let's get underway.

The Yaesu FT-857D is a super compact HF, VHF, and UHF transceiver. It operates all modes right up to 70 cm. SSB, CW and FM power output is 100 watts from 160 through to 6 metres. This drops to 50 watts on 2 metres and 20 watts on 70 cm. Power output using AM is a quarter of the above figures. Yaesu claim that the FT857D is the smallest transceiver in its class. Our measurements indeed show that this is so, but not by as much as you might imagine. The Yaesu measures 1,878 cubic cm while its nearest rival (you guess) is 1,937.2 cubic cm. Again, the Yaesu is lighter than its rival by .35 kg.

The FT-857D is the latest Yaesu in a long line of compact multi band transceivers which started several years ago with the FT100. We might even go back further to the original FTDX-100 which was quite a sensation in the late 1960s. This was all solid state, except for the final and driver stages which were tubes and this preceded the famous FT-101 series. I must admit that I was very tempted to purchase an FT-100 when they first came out, but was put off by the very odd DC power connector that was supplied. I have not seen one similar either before or since. However, the FT857D now comes with a standard six pin DC connector found on just about every other Japanese transceiver in the 100 watt output range. I guess they had a few complaints about that connector.

Photo 1 – The FT-857D and hand microphone.

Eric Buggee VK3AX tests the most compact transceiver of its type and finds it exceeds expectations.

The FT-857D is actually derived from the FT-817, that midget marvel much loved by QRP enthusiasts. Another derivation is the larger FT-897D. The 'D' indicates that it is an upgrade from the earlier FT-857. The new 'D' model now includes the previously optional DSP circuitry, as well as including operation on the 60 metre band, available in the US but, as yet, not allocated in Australia.

Of course, the usual features are included, such as a remotable front panel, and two antenna connectors, one for HF and six metres, the other for VHF and UHF. Let's look at the first of these. I don't believe that the remote front panel is implemented as well as some of the opposition. The connecting cable uses those cheap and nasty (in my opinion) plastic telephone plugs. A short one is included to connect the panel and main transceiver when they are normally used together. A longer separation cable is available as an option and it seems that an extension cable would also be needed for the microphone but, unfortunately, the remote kit was not supplied to us for evaluation. An extension speaker can be plugged into the front panel via a 3.5mm jack. This is switchable for either headphones or speaker.

Being of super compact size, the FT-857D is controlled by a 'menu' system. If you are still back in the dark ages, and using a transceiver with a separate control for every function (nothing against that), you will be in for a steep learning curve. However, the instruction manual is very straight forward and you

should soon sort things out. Basically, there are two menu systems.

Firstly, the 'set and forget' functions that you will set up initially and then probably not need again for a long time. Secondly, the menu functions that you will use in everyday operation of the radio. There are ninety one items in the first section and I would suggest that most of these can be left in their default positions, certainly in the short term.

The FT-857D on the air

Straight out of the box, I was surprised how hard it was to fit the remotable front panel to the main body. It took quite a solid hit to get it in place. I guess that, with practice, it might come easier. Navigating around the front panel is also rather hard. The designations for the various controls are small and many are hidden either on the side or top of the panel. Well, I guess that you can't have the most compact transceiver of its type and large labels. However, I get the impression that the earlier FT-100,

Photo 2 – The rear panel of the FT-857D and the power cable and socket.

G&C COMMUNICATIONS

See you at GGREC 16.7.05

Authorised dealer for Icom YAESU Kenwood Barrett RFDS GME Electrophone Uniden

ICOM (Australia) Transceivers

IC-756 Prof III HF + 6M	$6,699
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IC-718 HF SSB	$ 999
IC-910H 2M/70cm Multimode	$3,199
IC-2720H 2M + 70cm	$ 699
IC-208H 2M + 70cm	$ 649
IC-V8000 2M @ 75W	$ 649
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Antenna Tuners

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The auto MFJ 993

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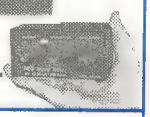

Antenna Rotators

G450A (shown)

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G-800DXA
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G-5500
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FT-8800R Dualband	$ 699
FT-8900R Quadband	$ 799
FT-817ND HF- 70cm	$1,199
FT-857D HF- 70cm	$1,399
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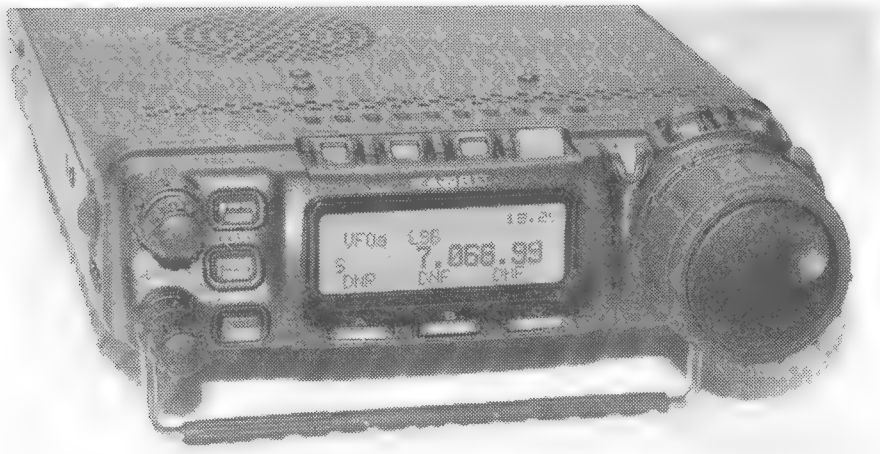

Photo 3 – A closer look at the FT-857D front panel.

although slightly bigger, has a much better panel layout. It also has a much larger display.

Once on the air, the FT-857D starts to show up its good points. The tuning knob, which dominates the panel, is smooth in operation. Two tuning speeds are selectable via the menu, fine or coarse. Fine gives 10 Hz tuning steps, coarse 20 Hz steps. Ten Hz steps give a rate of 2 kHz per knob revolution with the 20 Hz giving double this. 100 Hz steps are available for really fast tuning by giving the on/off power switch a very quick push.

Received audio was satisfactory on the small internal speaker but I thought the low frequency response was slightly lacking when using my normal external speaker, an Icom SP3. I rather liked the 'S' meter. This is, of course, part of the LCD display and, while being rather small, actually shows the reading in figures as well as the bargraph indication.

Transmit audio on SSB is rated as good. The audio can be enhanced in three ways. Firstly there is the speech processor with control via the menu to set the amount of compression. Secondly, the carrier point can be adjusted +/-300 Hz to set a desired high/low response balance; and finally there is a DSP microphone equalisation which selects low frequency emphasis, high frequency emphasis or mid frequency emphasis. With all of these you can produce transmit audio just about any way you prefer.

Looking at the CW facilities, one thing that intrigued me was the CW training program. This will send to you random Morse at any chosen speed in five character groups. Straight after this, it prints out the characters on the screen. A great opportunity to brush up your code. Try it, you'll like it. Of course, there are plenty of features for the real CW operator, including a built in electronic keyer. This can even be programmed to operate from the up/down buttons on the microphone if you forgot to pack the key before leaving on that DXpedition.

Talking about CW, I noted that Peter Forbes VK3QI reported recently in AR that an FT-100 outperformed other transceivers on CW during one of his IOTA expeditions. It was fitted with an optional 500 Hz filter. Look carefully at the FT-857D if you are a CW fanatic, it could well outperform some more expensive transceivers. One other feature worth mentioning is the display colour. You have a choice of 32 variations. It's possible to have a different colour for each band, each mode or anything else you can think of. I must admit that none of the colours really turned me on. I guess I must be hard to please. The FT-857 excels in the memory department. There are over two hundred memories which should be enough to cover all requirements

The FT-857D technical tests

These were carried out by Eric Buggee. Eric says that the results he found far exceeded his expectations. In fact, the figures were better than many transceivers costing nearly double the price. Eric says he might just have to buy one.

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Note from the Editor.

We will be reviewing other amateur equipment. The reviews are the reviewer's reaction to use of the equipment. They are not infomercials. Suppliers of the equipment will be supplied with a copy of the review and provided space to make further comment.

Comment from Yaesu distributor on the review

1. The front panel of the transceiver is NOT more difficult to fit to the main body of the transceiver, when compared to most current model remote able front panel transceivers. This is blatantly misleading.
2. There is no mention of the large VFO tuning knob, which is quite a desirable feature, as it allows very smooth and accurate VFO tuning.
3 The transmit audio can be tailored.
4 ".....the reviewer seems to have missed a major point in that the radio can be operated in THREE DSP receive modes simultaneously, ie. Digital Noise Reduction, Digital bandwidth tuning (or something like that) and Digital notch tuning (or something like that) to improve its receive performance in arduous conditions. "
5. The 10dB received S/N results per band are NOT clearly presented at all. I find them difficult to understand and I've read hundreds of radio specification sheets, including ones up to radio engineering level.
6 Usually, the dynamic range of a receiver is greater when its receive preamp is switched OFF, not ON. Using a receive preamp often increases the received signal compression effect (read; non-linearity), which in turn reduces the receiver's dynamic range. A receive preamp usually increases cross-modulation, intermodulation and blocking effects, which is detrimental to a receiver's performance.

These comments are mainly from one of our dealer, however we do agree with him in most of his observations.

David Benchoam, Benelec

Product Review: YAESU- FT857D

Serial No 4J10163

Manufacturers Claimed Specifications.	Measured By VK 3AX Receive (1) and Transmit as specified.
Frequency Coverage: Receive. 0.1-56, 76-108, 118-164, 420-470 MHz; Transmit: 1.8-2, 3.5-4, 7-7.3, 10.1-10.15, 14-14.35, 18.068-18.168, 21-21.45, 24.89-24.99, 28-29.7, 50-54, 144-148, 430-450 MHz .	
Power Requirement: Receive, 1.0A; Transmit: 22A (@100 W output)	Receiver Dynamic Testing Noise Floor (MDS), SSB Filt.
Modes of Operation: SSB, CW,	Pre-Amp Off / Pre-Amp On
AM, FM, & Data.	1.0 MHz -128 dBm / -134 dBm.
RECEIVER	1.8 MHz -129 dBm / -134 dBm
SSB/CW sensitivity, Bandwidth not Specified,	3.5 MHz -130 dBm / -134 dBm
10 dBS/B: 1.8-30 MHz, <0.2 µV; 50-54, 0.13 µV,	7.0 MHz -131dBm / -137 dBm
144-148, 430-450 MHz, ,0.13 µV.	10 MHz -133 dBm / -137 dBm
	21 MHz -134 dBm / -138 dBm
	24.9 MHz –134 dBm / -138 dBm
	28 MHz -134 dBm / -138 dBm
	50 MHz -35 dBm / -139 dBm
	144 MHz, (see note 2) / -140 dBm
	440 MHz (see note 2) / -139 dBm
	10 dB (s+N0/N, 1 kHz Tone, 30% Mod
AM sensitivity (Std Bandwidth),	1.0 MHz 4.46 µV 1.9 µV
10dB S/N: 0.1 - 1.8 MHz, <32 µV,	1.85 MHz 2.66 µV 1.3 µV
1.8 – 30 MHz, < 2 µV; 50-54 MHz,	3.6 MHz 2.5 µV 1.1 µV
<1 µV; 144-148 MHz, 430-450 MHz,	50 MHz 1.7 µV 0.7 µV
<0.2 µV.	144 MHz (see note2) 0.6 µV
	440 MHz (see note 2) 0.82 µV
FM Sensitivity, 12 dB SINAD; 28-30 MHz	0.5 µV 0.26 µV
<0.5 µV, 50-54 MHz, 144-148, 430-450 MHz	0.42 µV 0.2 µV
<0.2 µV.	146 MHz (see note 2) 0.18 µV
	440 MHz (see note 2) 0.19 µV
Blocking Dynamic Range: Not Specified.	Blocking Dynamic Range (SSB) Spacing: 20 kHz Pre-Amp On Off 3.5 MHz 107 dB 104 dB 14 MHz 107 dB 103 dB 50 MHz 106 dB 100 dB 144 MHz (see note 2) 100 dB 440 MHz (see note 2) 94 dB
Two-Tone, Third Order IMD dynamic range Not Specified.	Two-tone 3rd Order IMD dynamic range Spacing 20 kHz Pre-Amp: Off On 3.5 MHz 88 87 dB 14 MHz 86 85 dB 50 MHz 88 83 dB 144 MHz (note 2) 82 dB 432 MHz (note 2) 83 dB
Third-order intercept: Not specified.	Spacing 20 kHz Pre-Amp: Off On 3.5 MHz +7.5 +0 dBm 14 MHz +2.0 -7.3 dBm 50 MHz -2.0 -9.0 dBm 144 MHz (note2) -10.6 dBm 440 MHz (note 2) –8.5 dBm
FM: adjacent channel rejection not specified	20 kHz channel spacing, Pre-Amp on. 29 MHz, 65 dB; 52 MHz, 62 dB; 146 MHz, 65 dB; 440 MHz, 58 dB.
FM: two-tone, third order IMD dynamic range. not specified.	20 kHz channel spacing, Pre-Amp-On. 29 MHz, 63dB; 52MHz, 62dB; 146 MHz, 60 dB; 440 MHz, 58dB.
S-meter sensitivity; (SSB) Not specified. S9: Signal @	Pre-Amp Off On 1.85 MHz 80 µV 30 µV 3.6 MHz 92 µV 36 µV 7.1 MHz 80 µV 33 µV 10.1 MHz 84 µV 32 µV 14.2 MHz 65 µV 25 µV 18.1 MHz 60 µV 22 µV 21.5 MHz 56 µV 22 µV 24.9 MHz 62 µV 22 µV 28.5 MHz 60 µV 22 µV 52 MHz 45 µV 15 µV 144 MHz, SSB 10 µV (see note) 146 MHz, FM (see note) 3.2 µV 432 MHz, SSB 9.1 µV (see note) 440 MHz, FM (see note) 3.3 µV
Squelch sensitivity: SSB,1.8-30 MHz, 2.5 µV; 50-54 MHz, < 1.0 µV, 144 / 440 MHz, <0.5 µV; FM, 28-30 MHz, < 0.32 µV; 50-54 MHz, 144-148, 430-450 MHz, <0.16 µV.	At threshold, Pre-Amp On: SSB, 14 MHz, 1.99 µV; FM, 29 MHz, 0.15 µV; 52 MHz, 0.1 µV; 146 MHz 0.075 µV; 440 MHz, 0.1 µV.
Rx Audio Output; 2.5 W @ 10% THD into 4 Ohm..	Measured 3.0 W @ 10% into 4 Ohm
Transmitter.	Transmitter
Power output: HF , 50 MHz.; SSB, CW, FM,100W;	Dynamic tests; HF, 50 MHz; AM, 25 W (carrier); 144 MHz, SSB, CW, FM, 50 W; typically 97 high, 7 W low;
AM, 12.5 W (carrier); 430 MHz, SSB, CW, FM, 20 W,	AM, typically 23 W high, 1.5
AM, 5 W.	W low; 144 MHz, CW, SSB, FM, typically 45 W high, 1.5 W low; 430 MHz; CW, SSB, FM, typically 16 W high, 1.5 W low; AM typically 3.5 W high, 0.7 W low.
Spurious signal & Harmonic suppression; >50 dB on HF; > 60 dB on VHF & UHF	HF, >50 dB, 50 MHz, >60 dB; 144 MHz, >60 dB, 430 MHz >60 dB.
SSB carrier suppression; >40 dB.	>50 dB.
Unwanted sideband suppression.	>50 dB.
Third-order intermodulation distortion products; Not specified.	App –25 dB wrt fundamental. 5th order, approx –40 dB.

Test Equipment used: Rohde &Schwarz CMT 52 & CMT 54.
Bird 43 wattmeter & Bird 8154 terminating wattmeter / load.
Marconi TF 893A Audio load / Wattmeter.

This transceiver performs extremely well as the above figures show. Its very small size can be both an advantage and a disadvantage. In the latter case, the small front panel with its hard to read labelling and the small size of the display might go against it. On the other hand, these very things might well appeal to others. Either way, the performance is excellent.

Our transceiver was supplied to us by Benelec. Details of the FT857D and all other Yaesu equipment can be found on the Benelec web site at www.benelec.com.au

Check the advertisements in the current AR for prices.

Amateur Radio

Reports to WIA 2005 Annual General Meeting

Fellow Directors, Members, Wireless Institute of Australia.
It is my pleasure to report on the three areas of my portfolio. They are;

- *Amateur Radio* Magazine
- The 2005 Callbook.
- Affiliated clubs.

In this report I will acknowledge the efforts of the many willing volunteers, highlight the events of the past year and point to the way forward. Statistics are below.

Amateur Radio Magazine

The only place to start is to acknowledge and applaud the tireless work of the Editor, Colwyn Low and all members of the publications committee. I should also thank John Nieman from Newsletters Unlimited for his willing help and support. It has been a rapid learning experience made much easier by his help.

One of the greatest challenges has been keeping up with the many changes in the WIA. No easy task when states progress at different rates and even the smallest change starts a chain of events. I believe we are now close to having it right but corrections and supportive comments are always welcome.

By now members should have noticed some real improvements in the presentation of A.R. This is due to the constant detailed attention of the proof readers in the publications committee. I have been helping them to focus on an old/new strategy. If we can find fault, it is not good enough, so we do something to fix it.

Much of the Publications Committee's time is taken up in reshaping technical and general articles so that they can be published. The small number of regular writers has supplied enough material for around six months into the future but we can always do with more. New writers are very welcome, though I ask all first timers to check page 1 of AR and contact the appropriate Editor, before the article is written. This can save the writer and Editor a lot of time and rework. Naturally it also means the article can be ready to publish much quicker.

The statistics show the high annual cost of AR. This, and the iconic status of the magazine will be very much in mind as we strive for ongoing improvements.

2005 Callbook

I must propose a vote of thanks to Brenda Edmonds who almost single handedly coordinated preparation of the 2005 Call book. Many thanks also to John Martin and other contributors who must have spent countless hours checking the myriad of detail.

Each year we are faced with the same problem. What IS the Callbook?

Only around 60% is the listing of Australian call signs. The rest is, an introduction to the WIA, an overview of ACA information, a technical resource for repeaters, beacons and band plans, and much more. We often receive suggestions that it should also have".....", so we have to weigh up what to include and what to leave out.

The most difficult task is getting accurate information. In recent issues of AR, we have asked contributors to update their areas of interest and prepare for input. Likewise with individual call sign details. The cut off date to ACA is around 30 June 2005.

Anyone observing errors is asked to advise us via callbook@wia.org.au

Distribution of the 2005 callbook via clubs was successful with only a few problems due to crossed wires. It is likely that the 2006 Callbook will be distributed in the same way. Any clubs organizing events after 1 September 2005 are asked to place advance orders with National Office by September 1st.

The call book is both a service and business activity. In future editions economics and content are both key factors to be considered.

WIA President, Michael Owen, VK3KI opens the WIA AGM at the Italo Australian Club, Canberra on 7 May 2005 in front of the new WIA amateur radio posters. Sitting are from left, are WIA directors Phil Wait, VK2DKN, Robert Broomhead VK3KRB, Michael, Treasurer David Pilley, VK2AYD and Vice President, Ewan McLeod, VK4ERM.

Affiliated clubs

The driving force behind building up the WIA – Clubs relationship has been Michael Owen. Without Michael's efforts in visiting and speaking to clubs, many would be thinking "What WIA" instead of "Our WIA". My part in working with the clubs has been and still is, making contact and updating the information necessary for the WIA to communicate effectively with all affiliated clubs.

The clubs listing at www.wia.org.au is now close to complete. It is not 100% and we need active monitoring and input from all clubs. If the details of your club are missing or incorrect, please use the update form on the clubs page.

An important issue at the moment is "Affiliation". As of 16 May 2004 all clubs known to be previously affiliated with their Divisions, were considered to be "Provisionally" affiliated so as to ensure that continuity was maintained for them.

In December 2004 the President sent to all listed clubs, an invitation to formalize affiliation and join in the insurance policy. So far, out of 136 known clubs only 49 have taken up affiliation and a smaller number the insurance.

What I don't know is how many clubs actually received the President's invitation. A copy can be supplied to any club that did not receive it by contacting nationaloffice@wia.org.au .

With the new Foundation Licence coming very soon, along with major changes to the exam process, it is very important that the WIA knows how to contact all clubs that want to be involved.

I have now found that there are at least 15 clubs listed as conducting exams but they are not known as affiliated clubs.

Ted Thrift VK2ARA
Director

Report from the Editor

This is my sixth year as Editor and the magazine is still able to maintain a good standard. This is not due to my efforts but to the authors of the technical articles, the general articles and the regular columns. The regular columnists provide about half the magazine each month and their contribution shows the breadth of amateur radio as a hobby in Australia. We would not have a magazine without them. Thanks to you all.

When I took over from Bill Rice in 2000 articles were just ahead of the publication needs and if it had not been for Drew Diamond VK3XU and Peter Parker VK3YE there would have been little technical content. Today we still have a steady flow of articles from Drew but with contributions from Dale Hughes VK2DSH, Jim Tregellas VK5JST, Keith Gooley VK5OQ and many others I am now able to think about what goes with what in a particular issue.

I do not seem to get too many brickbats so the magazine must have a good balance. However there is still not much on microwaves and digital modes submitted to AR.

It was pleasing during the year to be asked by the RSGB to use material from AR in a new book on aerials and have requests from other overseas magazines to reprint material from AR.

The magazine is produced by the Publications Committee and the Editor. The Publications Committee meets monthly to review material submitted to AR, allocate vetting officers and review the last available issue of AR. This is to make sure we keep the standards as high as possible. While everyone works hard, special thanks are due to Bill Roper VK3BR, secretary of the Publications Committee. He receives and distributes articles as they are submitted. Bill also prepares the final diagrams to the magazine's standard. He keeps the files of articles being vetted and those available for production.

Finally we need to record our continuing reliance on Gill Nieman who does all the setting up of the magazine for printing. All credit for the layout is hers, so while I determine the content, Gill sets it up to be eyecatching and easy to read. John Nieman looks after the advertising and the distribution. Since we placed AR on the newsstands we make a small profit to help with production costs. We are selling a slowly increasing number of magazines each month.

So all in all we have had a good year. It has been pleasing to have Ted Thrift VK2ARA Director and Michael Owen VK3KI President attend most of the Publication Committee meetings.

Colwyn Low VK5UE
Editor

ar

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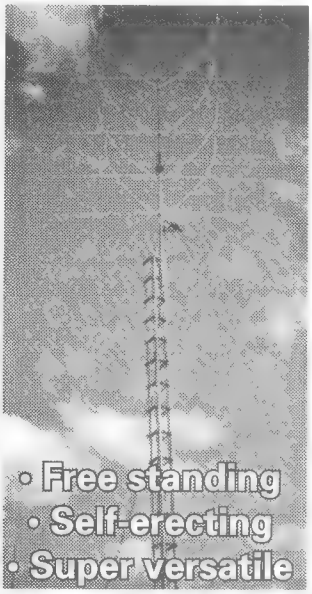

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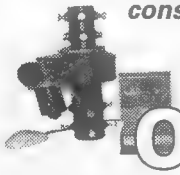

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Kev Peacock VK4KKD

Opinion

Is the Remembrance Day Contest dying?

Vince Henderson VK7VH

Opinion on the future viability of the Remembrance Day Contest seems to have gathered momentum. There are some that would oppose any change to the contest. Some feel we need to make changes in order to increase the level of participation. There are also others that predict the demise of the contest if it remains in its current form. It is certain that the contest is in decline.

The situation could be summed up by looking at the possibilities for the future:

1. Do nothing and leave the contest as it is.
2. Let things roll along and if the contest folds, then so be it.
3. Make drastic changes to the contest format.
4. Make some subtle changes based on a long term strategy that evolves with the needs of contest participants.

There is no doubt that the level of participation has waned over the years. You only need to look at the history of the event results to see the rate of decline. It is time for a rethink. While I do not profess to have a magic pill, I do have a few ideas.

I feel that many people would agree that the RD Contest needs a shot in the arm. However, where do we start? What if change gets people offside? In the end, we need to consider the long term future of the contest. With that foremost in our minds, we should move towards revamping the contest, starting in 2006. I personally favour point 4 above. Let's have a look at what we could do.

Have two time sections

There are a number of options available. The contest could be split into a 24 hour section and two 12 hour sections. Let's say that the 12 hour sections are divided by running the first 12 hour section from 0800 UTC (6.00pm EST) until 1959 UTC (5.59am EST) and the second section from 2000 UTC (6.00am) until 0759 UTC (6.00pm EST). This would open up some possible changes.

- All operators could enter the full 24 hours or just 12 hours. However, if contacts are made in both 12 hour sections, the entry must then be considered a 24 hour entry.
- The current rule for VHF allows repeat contacts every 2 hours. With two 12 hour sections, HF operators entering the full 24 hours could be allowed a repeat contact during the second 12 hour section.

The extra section may attract people who would not normally have a real go at the contest due to other commitments. A change to HF operators being allowed a repeat contact during the second 12 hour section should see some interesting strategies, not to mention the appeal of a different challenge.

Redefine the modes

The current modes are Transmitting Phone (AM, FM, SSB, TV) and Transmitting CW. There is no doubt that the digital revolution is with us. New methods of transmitting and receiving are being developed and have captured the imagination of hams all over the world. Why not introduce a third allowable mode? Consider the following suggestion:

- Transmitting Phone to be retained and only voice transmissions are allowed via AM, FM, SSB and TV.
- Transmitting CW to be retained. Change the current scoring from 2 points per contact to 1 point per contact.
- Introduce Transmitting Digital. 1 point per contact.

But why reduce CW contacts to 1 point? Well, in my humble opinion, this would put CW point scoring on an equal footing with all other modes and encourage people to enter Transmitting Digital.

What types of digital modes are allowed will probably need development over time. Maybe a starting point would be to allow PSK31, RTTY, MT63 or even digital/analog SSTV.

Allow more diverse entries

The present entry categories for HF and VHF are:

a) Transmitting Phone
b) Transmitting CW
c) Transmitting Open (a combination of Phone and CW)

The majority of entries for the 2004 event were HF and VHF Phone. There were only 14 HF open entries and only 6 VHF open entries. While HF CW continues to have reasonable support, there were no VHF CW entries. One way that may assist with increased VHF Open entries and indeed HF Open entries, is to allow the following entry categories for HF and VHF:

a) Transmitting Phone
b) Transmitting CW
c) Transmitting Digital
d) Transmitting Open. A combination of a) + b), a) + c) or b) + c).

Allowance could also be made for separate entries for each category.

A simple increase in entry options may be one way of getting people to look at the RD Contest in a new light. The addition of digital modes may encourage some who have not used these modes to at least consider adding to the way they enjoy amateur radio, and add flavour to the RD Contest.

Recognition for effort

"What on earth is he talking about?" I hear you say. The present licensing arrangements are about to change. Why not give recognition to the top VK entries that hold a call other than unrestricted.

- Issue a certificate to the top VK intermediate licence holder (all categories).
- Issue a certificate to the top VK

The views expressed in the *Opinion* column are those of the authors, and do not necessarily reflect the official policy of the Wireless Institute of Australia.

foundation licence holder (all categories).

- Where applicable, do the same in ZL and P2.

The power and band limitations for intermediate and foundation licensees, make it difficult to compete with big gun unrestricted licence holders. Recognition for having the top score in the country, for your licence class, is something worth aiming for.

While the above suggestions may not get a start in the 2006 event, we should have a plan that allows for future fine tuning of the event. If a change is made and found to be unpopular, we need courage to keep trying alternatives.

It is a balancing act to keep everyone happy. Good planning will usually overcome difficulties. It is no use saying, "ah well that doesn't work, what will we do now?" If changes are made to the contest, contingency plans are a must.

The job of Contest Manager is no easy task. After eleven years as the Remembrance Day Contest Coordinator, Alek VK6APK, is retiring. I am sure that all VK, ZL and P2 amateurs will join me in offering our profound gratitude for Alek's dedication to the enormous task of contest coordinator. Bravo Alek.

The management of the RD Contest has been taken up by Chris VK4AA. We wish Chris well in his new role. I am sure he will welcome any suggestions on how to improve the RD Contest. I encourage all readers to write with their ideas.

In closing I would like to raise one final suggestion. Research shows that seventy five percent of amateurs have a computer. Maybe it is time for the WIA to look at having a contest robot program that will allow entry logs to all WIA sponsored contests to be emailed. The ARRL made a move in this direction a number of years ago. Many countries are now following suit. In fact, most major contests will only accept logs of fifty contacts or more in Cabrillo format, via email.

The benefits of computerised log submissions are many. Entrants receive an immediate email confirming their log has been received. If there is a problem, the contest robot will email the entrant with details of what the problem is. The greatest advantage is that the contest manager's job is made easier as the contest robot program cross-checks and validates the log entries automatically.

The robot program would generate accurate results able to be published a short time after the closing date.

Movement to this type of log management would at least ease my mind a little as my suggestions would mean an increase in the number of certificates awarded because of the expansion of RD Contest categories. Issuing of certificates is managed by the contest coordinator and without software management of log submissions; the work load would increase dramatically.

I do not claim to have definitive answers as to how we can spice up the RD Contest. What I do know is that we need to act now and make some changes in order to increase the participation and enjoyment of this great event.

Happy contesting and I hope to work you in the 2005 Remembrance Day Contest.

ar

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News from...

VK2

Compiled by Chris Devery VK2XCD
President Amateur Radio NSW,
and Tim Mills VK2ZTM.

The AGM of the Amateur Radio NSW (the old NSW Division) was held at Amateur Radio House on Saturday 17th April.

For the first time in many years there were eleven nominations for the nine Council positions, and a ballot was required. The 2005/6 Council consists of Mark Blackmore VK2XOF, Chris Devery VK2XCD, Chris Flak VK2QV, Owen Holmwood VK2AEJ, Brian Kelly VK2WBK, Noel May VK2YXM, Norm Partridge VK2TOP, Terry Ryeland VK2UX and Barry White VK2AAB.

At the first meeting of the new council, office holders were elected and portfolios allocated. Positions are Chris Devery VK2XCD, President and Publicity; Norm Partridge VK2TOP, Senior Vice President, Clubs, Membership and QSL Liaison; Terry Ryeland VK2UX, Junior Vice President and Education; Owen Holmwood VK2AEJ, Secretary and Public Officer; Noel May VK2YXM, Treasurer; Mark Blackmore VK2XOF, Deceased Estates, Trash and Treasure and Dural Officer; Brian Kelly VK2WBK, NTAC; and Chris Flak VK2QV, Bookshop and Web Master.

The new council will be seeking to meet with the WIA to consider the QSL Bureau, the bookshop, broadcasts and other issues, in the spirit of the implementation agreement entered into between the WIA and the old divisions. As President it is my intention to establish a harmonious and co-operative relationship between Amateur Radio NSW and the WIA, with the focus of the relationship being on what is in the best interests of the hobby of amateur radio.

One of the most significant issues facing NSW is the decline in membership following the establishment of the national WIA. Approximately 50 per cent of members have been lost, with a somewhat larger loss of members in country areas. The critical period for us will be in June and July, when members will be considering whether to renew their membership of Amateur Radio NSW under the new structure. If you have not renewed your membership of Amateur Radio NSW, or are thinking about not renewing, and have an interest in the future of the organisation, please consider renewing or re-joining so that you can have your say.

It was refreshing to attend the AGM of the WIA in Canberra, and witness an entire meeting focussed on significant matters facing the hobby and its future. Debate was lively and constructive and the format of the meeting provided a useful opportunity for members present to provide feedback to the directors on a wide range of issues.

One of the significant functions of Amateur Radio NSW has always been the management of deceased estates. Most importantly, this is a service to the families of silent keys, relieving them of the burden of dealing with equipment, and ensuring that appropriate values are realised for gear. Council has decided to make use of the web site to display and itemise major items being offered by the Deceased Estates and Trash and Treasure section. Members will have the first opportunity to tender for equipment, subject to a reserve price. Smaller and less significant items will continue to be offered at the monthly trash and treasure. The weekly VK2WI news sessions and internet site will advise when this new system will commence.

The Parramatta office is currently open on Tuesdays, Thursdays and Fridays, 11 am to 2 pm. The hours of paid staff have been reduced to assist council to balance the budget this year, and volunteers who wish to assist will be very welcome. Contact methods are telephone 02 9689 2417; freecall 1 800 817 644; fax 02 9633 1525;

Mail to PO Box 9432 Harris Park 2150; email vk2wi@ozemail.com.au ;

Street address, 109 Wigram Street, Parramatta.

The Blue Mountains Amateur Radio Club

will be holding

WINTERFEST 2005

on

Saturday August 27 2005

at the

1st Blaxland Scout Hall, Reading Street, Glenbrook NSW.

Please note that the date for WINTERFEST 2005 has changed from the previously advertised date.

Last year was a very successful event with over 100 attendees, including sellers. This year we hope to have several of the major amateur radio equipment suppliers represented.

So come along and enjoy the fresh mountain air and the bargains on offer at

WINTERFEST 2005.

John Watt VK2QN
Blue Mountains Amateur Radio Club Inc
Public Officer

Silent key

SJ Hutchison VK2FFF
Mona Vale NSW

VK4

From Alistair Elrick VK4MV

Townsville, the Convention City

The Far North and North Queensland Amateur Radio Get-Together FNNQARG!

The date is Friday, June 10th to Monday June 13th at King Reef Resort Kurrimine Beach. All accommodation at Kurrimine Beach has been booked out. Source accommodation (within a 25km radius) at El Arish, Mourilyan, Mission Beach, Innisfail or Tully. vk4wit@wia.org.au or http://www.vk4tub.org/tarc/

The FNNQARG! Raffle is a Magellan Explorist 100 14-channel portable GPS Receiver donated by Navcom Electronics.

News of Convention!

North Queensland Amateur Radio Convention September information pack is on the WEB at the TARC website. The pack contains info on venues and costs and includes the registration form required to access catered events held during the Convention. http://www.vk4tub.org/tarc/convention.htm

Getting together socially

That recent get together which was organised by Sunshine Coast and Dalby Amateur Radio Clubs at Somerset Dam went ahead and according to all who attended "it went very well." In excess of 40 adults plus kids from 9 radio interest groups! Redcliffe, Bayside, Caboolture, Summerland, Lockyer Valley, Kilo Romeo, Albatross Radio Club, Dalby and the Sunshine Coast were all represented.

Trying hard not to be outdone by such a turnout, Bundaberg and Hervey Bay Amateur Radio Clubs held a very enjoyable B-B-Q and social outing with thirty three adults and five harmonics gathering at Burrum Heads for a beaut Queensland April day at the beach. It was Hervey Bay's turn this time to provide the steaks, sausages and onions while Bundy bought the bread rolls etc. Rusty tells us the next outing for these two Clubs will be organised by Bundaberg July 31.

South Coast Radio Amateurs Group

The South Coast Amateur Radio Group of around 60 mature Amateurs was formed some 3 years ago. As it is the third birthday of the group they have decided to combine the meeting on the 4th June with a BBQ etc, starting at 1200hrs at the home of Ken and Daphne in Nerang. Those wishing to attend please let Daphne know by 4th June, so that catering can be arranged. Club callsign VK4WIF Repeater VK4RBT 147.800.

WIA Members Verification Service for Queensland Clubs

Are you a Club Official and need to Verify? As part of the process to participate in the Wireless Institute of Australia through such things as Affiliation, Public Risk Insurance and the National Grants Scheme, clubs need to provide to WIA National Office data on the number of members who are also WIA members.

Most Clubs can do this via internal process however some Clubs have been making enquiries as to whether the WIA can help verify the number of WIA members in the Club. The WIA Queensland Advisory Committee can now help you via the WIA Members Verification Service for Queensland Clubs. Essentially, all Club Secretaries need to do - after of course making sure that all their constitutional and legal requirements plus members wishes are met, is to submit a list of Callsigns or WIA Short Wave Listener numbers to the service. This list will be compared with the WIA Membership List and the number of WIA Members will then be sent back.

Want to know more about the Verification Service including the Privacy Protocols? Contact the WIA Queensland Advisory Committee Secretary Ken Fuller VK4KF, either by mail to PO Box 199, Wavell Heights, QLD, 4812 vk4kf@wia.org.au or telephone 3901 1037.

Brief report on the contact between Albany Hills School and the ISS

The link-up on Wednesday evening between the students of Albany Hills School in Brisbane and astronaut John Phillips on the International Space Station was a copy book contact thanks to Mark, VK4AW.

Mark setup the phone patch at the school and the students' teacher Cheryl Capra did a brilliant job preparing the students. All the student questions were answered by John with a large spectator audience watching and listening in at Albany Hills. This was the first school contact that John Phillips has done and from an E-mail report that Tony, VK5ZAI received the following morning, said he was most impressed with the standard of the questions and how they were presented.

Clairview

By all accounts, well the one we did get!

From Clive VK4ACC, this weekend was "absolutely fabulous', Much hamming but also much time for relaxing. In fact the venue is VERY peaceful and relaxing. About 50 turned up for the weekend and in particular the U Beaut fund raising Auction on the Saturday evening. It was good to see people turn up from as far away as Brisbane, Townsville, Rockhampton, Mackay, Tieri, Dysart, Gladstone, Harvey Bay, Noosa and more.

Some arrived a day or two early some departed a day or two after. VK4MOO and VK4MAR were successful at fishing and crabbing. The quality of preloved goods for auction improved this year and so did the quantity. The fund raising was successful also. VK4AIV Wal the auctioneer stopped a few times to regain breath and strength. The auction went for more than 3 hours. Everyone had a good time over the weekend and most agreed that the weekend will be worth coming to again next year. Word has it the QSL bureau will definitely be aiming to visit again in 2006.

News from...

New generator for Sunshine Coast Amateur Radio Club (SCARC)

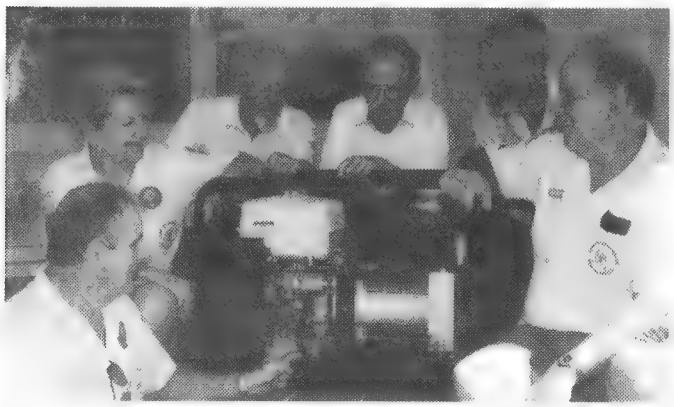
Harvey Wickes VK4AHW
President, SCARC

Recently, the Caloundra RSL Club was approached by SCARC president, Harvey Wickes, VK4AHW, to see if they would be able to help with a much needed emergency power generator. The generator was required to supply the emergency power requirements of the SCARC Clubrooms, where a well equipped WICEN communications center is set up.

As the region is prone to cyclones and local flooding, power and communications can be totally disrupted at times. With the aid of the 6KVA electric start Generator, so generously supplied by the Caloundra RSL, vital WICEN communications can now be assured.

In the interests of portability, the generator has been mounted on a wheeled trolley. It can easily be man-handled onto a trailer by two people, should the need arise.

The second photograph displays the Generator under our new Club Banner, which was funded by the (then) WIAQ grants system. This banner serves to advertise Amateur Radio in general, and is used at SCARC outdoor functions, such as Car Rallies, JOTA and the Lighthouse weekend.



VK5

Adelaide Hills Amateur Radio Society Inc.

Please note the updated information for AHARS Inc. following our Annual General Meeting:

VK5BAR
Adelaide Hills Amateur Radio Society Inc.
PO Box 401
BLACKWOOD SA 5051
Website - http://www.qsl.net/vk5bar/
Email - dellio2@bigpond.net.au

President - Geoff Taylor VK5TY - Phone (08) 8293 5615 - Email geencee@picknowl.com.au
Secretary - Leith Mayfield VK5QH - Phone (08) 8296 6013 - Email lmayfield@iprimus.com.au
Treasurer - Hans Smit VK5YX - Phone (08) 8390 3760 - Email vk5yx@tpg.com.au

AHARS meets on the third Thursday of each month (not January, July or December) at The Masonic Hall, Main Road, Blackwood.

Meetings commence at 7.30 pm. (Meetings may commence later due to prior bookings) Entry is from the rear of the hall.

Leith Mayfield
Hon Secretary AHARS Inc.

VK6

Will McGhie VK6UU
will2@iinet.net.au 08 9291 7165

WARG

The West Australian Repeater Group's annual newsletter arrived at the end of April just before their AGM on the 2nd of May. WARG is one of VK6's most successful clubs having been formed in the mid 1970s and has a current membership of 163. The club maintains more than half the voice repeaters in VK6 along with a BBS and a number of digipeaters. The club runs a Sunday morning on-air net, which had its beginnings way back in the 1980s. Of recent times the net controller, Sunday after Sunday has been Clive, VK6CSW who contributed an article to the newsletter. Clive mentions in the newsletter that he has run the Sunday net from 1996 and has been there 400 times each Sunday morning but is now taking a well-earned break. Well-done Clive.

1923

Back to the history of the VK6 division as told from the council minutes book, 1923. Four new members were accepted at the January 31st meeting and a field day was to be arranged by an appointed committee. Also a separate committee of 3 was formed to represent the Institute so as to be involved with a workshop in conjunction with the Boy Scouts. On the 8th of February the field day committee met with the brief "to develop the social side of the Institute and to arrange competitive tests." Two schemes were put forward, charter the Zephyr on a suitable night or "contact the Swan River ferries to find out the cost of hiring boat (Valdona) with piano and arrange a picnic with musical items on board and a wireless concert in evening." For those who don't know what the Zephyr is it was a large wooden ferry that graced the Swan River for many years. It appears that a field day was not quite the same, as we know of it today.

The February Committee meeting reported on the field day plans. "The Swan River Ferries were interviewed and quoted 10 pounds for hire of Valdona, piano extra." The Zephyr was available "and that we could fix an aerial on it." It was decided that "we take the Zephyr scheme for March 15th on the following condition that we take no liability and the company allows us 100 complimentary tickets." Has the World changed or what? Imagine today hiring a large boat with the proviso that we take no liability, plus 100 free tickets!

February's committee meeting was informed that the Zephyr "would not entertain the suggestion of issue of complementary ticket." I gather the "no liability" was not a problem! The second scheme, the Valdona, was then considered but it was also found that another smaller launch (no name) was also available that could take eighty passengers. It was this launch that was to be secured for 5 pounds. At the field day there would be a "competition for crystal sets for members be held and the prizes 1 pound 1 shilling for first and 10/6 for second."

February's general meeting was to inform members as to the progress on the field day, which was to be held on March 10th. Rulebooks were to be presented to all senior members joining the Institute. The lecture by Mr Coxon was on low power transmitters.

March's council meeting received a letter from the NSW branch "drawing attention to a new journal called "Radio" and asking us for our cooperation in making it the official journal." A motion was carried to that effect. Also a number of radio enthusiasts of Subiaco (a suburb of Perth) wanted to form a club and asked about affiliation. It was agreed to support the new club and affiliation would be considered once the club was formed. The general meeting had a brief report on the field day. "The Secretary reported a loss of 2/1/6 on the river picnic and competition. This has to be made good from Institute funds due to the lack of interest shown by members." The lecture was on knotting and the best knots to use when erecting aerials.

There appear to have been no meetings in April. The council meeting for May had a request from the Victorian Division "who desired us to be represented at the Broadcasting Conference." It was agreed to send a representative. There are no details as to the nature of "the Broadcasting Conference." The general meeting in May congratulated Mr Coxon "on his success in receiving Mr McLurcan (best guess) a Sydney amateur. The power of the transmitter being 10 Watts. The transmission over such a long distance over land on such low power constitutes a World record." Another council and general meeting was held in May on the 30th where a request for affiliation from the Subiaco Radio Society was received with Council to consider. The Secretary was to open an account with The Commonwealth Savings Bank. No mention of where W.A. Divisional funds where kept before this.

A special council meeting on June 6th could not decide on the Subiaco Radio Society affiliation, as rules had not been passed by the general meeting. Another special council meeting on June 21st heard a report on the Broadcasting Conference. However the minutes do not mention what happened at the conference. The affiliation application from The Subiaco Radio Society was "granted subject to the rules governing affiliation being agreed to at round table conference."

June was also the AGM held on the 27th with the usual AGM business. Several mentions of the Broadcasting Conference but no details.

July's Special Council meeting on the 11th was to meet representatives from The Subiaco Radio Society "to lay down conditions of affiliation." There was no conclusion and the meeting was postponed till July 19th at which it was decided that affiliated clubs had to have at least 10 full members. Affiliation rules to be drafted and presented to council. July's normal Council meeting decided "that council members have individual photos taken, framed and inscribed and then presented to the President (Mr Holt) with 50% of the cost to be borne by the Institute." No reason as to the purpose of the photos. Did it happen and if so where are they today? At the July general meeting an outline of the Broadcasting Conference was given but not detailed in the minutes. Members of The Subiaco Radio Society were present by invitation.

A committee meeting was held on August 27 to draw up rules on affiliation and this was done, all 6 of them. At the normal council meeting on August 29 it was decided to hold another Special Council meeting on September 7 to deal with "correspondence re Relay League." August's general meeting discussed the formation of a publicity committee.

At the September special meeting the affiliation report was received and was to be placed before the general meeting. A nomination for Radio Inspector and change of meeting location to the fire station, were items but no mention of "correspondence re Relay League." At the normal September council meeting "a discussion then arose with reference to members of the council absenting themselves without leave." It was agreed to enforce rule 24 against offending members." Attendance at Council meetings was taken seriously in 1923! The general meeting approved of the affiliation rules.

October meetings welcomed two more members and Western Wireless was now to be the "official organ of WA." Also decided "Amalg Wireless re patents lie on the table for 12 months." The lecture was on electrical hazards (illustrated) and a display of high frequency. The

Subiaco Radio Society was present by invitation.

A special council meeting was held in early November where The Mt Lawley Radio Club was affiliated with the WA Institute. Another special council meeting was held later in November with the Wireless Development Association to discuss cooperation in the holding of a Wireless Exhibition and concert. A combined committee was formed to look at the possibility of such an exhibition early in the New Year. The General Meeting for November decided to enquire from "the Eastern States Divisions re broadcasting charges as applied to the experimenter." The Secretary was to "get in touch with Western Wireless re proposed testimonial to Mr Coxon."

December special meetings further discussed exhibition and concert plans and a motion was carried to "hold our meetings fortnightly." Throughout 1923 the number of meetings and the volume of issues discussed was increasing. These notes may not reflect this, as much of the business was relating to changes of office holders and general council business and I have passed over these issues. However the minutes do reflect much was happening with radio in 1923. The council meeting for December had representatives from the Subiaco, Fremantle and Mt Lawley radio clubs. A request from the Victorian Division to "appoint a proxy in Melbourne and be able to attend any conferences with the Radio Department." From the minutes "The Chief Manager of Wireless wrote asking that some action be taken to form a Council or Executive with whom he could consult knowing it was representative of Experimenters interests." It was agreed to appoint a proxy in Melbourne.

The final General meeting for 1923 was a big one held at Central Fire Station Perth. The assistant Secretary was "requested to take all minutes and have them properly recorded." If this happened I wonder where they are? There were seven items of correspondence. A representative was present from the Goldfields Radio Society, "the Secretary Mr.Cecil, who was staying at 1202 Hay Street while in Perth." The Goldfields Radio Society would like to carry out tests with the Institute at a later date" he stated. Recognition was required that Mr Coxon had been transmitting a concert twice a week for about the last eighteen months. A Mr Bush gave members some very interesting information about the Wireless position in England. With season's greetings the meeting closed at 10.20PM 20th December 1923.

It is worth remembering that at this time in radio history, broadcast radio, as we know it, was about to take off. A search of the Internet makes for interesting reading about the beginning of broadcast radio in Australia. A system of sealed radio receivers, that were locked to one frequency only, was tried but failed, as many people (amateurs) just had to fiddle to get around the limitation and tune the medium wave band. Between August 1923 and June 1924 only 1,400 listeners entered the sealed set scheme, while in the same period the Postmaster-General's Department received some 5,000 applications for Experimental Licences from people who could not be properly classified as experimenters.

What an exciting time and is it not a pity we have so little of this history recorded from an Amateur Radio perspective. Our history lies fading away all over the country to perhaps be lost forever.

VK7

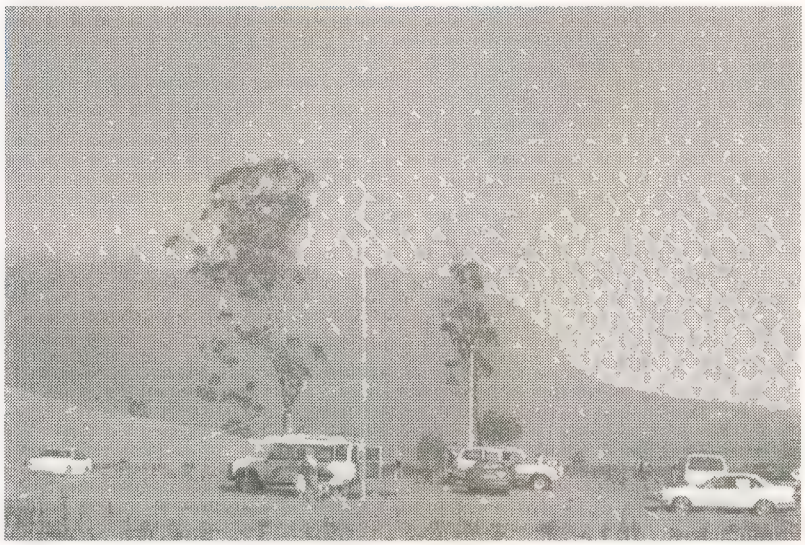
Justin Giles-Clark, VK7TW
Email: vk7tw@wia.org.au Regional Web Site: reast.asn.au

Another successful Targa Tasmania

REAST's WICEN group again enjoyed a wide range of weather conditions ranging from pleasant sunshine to hailstones the size of five-cent pieces and snow on the West Coast. 13 REAST members assisted by 10 family and friends ran repeaters and SOS points around the State. 5 crews of 2 worked every day of the weeklong state-wide event.

Problems on the final day with poor mobile phone coverage on the West Coast saw the WICEN crew provide a mid band VHF to commercial UHF cross band link in the Casino car park enabling UHF handhelds in Headquarters to talk to Tarraleah via the link and Mt Faulkner.

This is a fantastic demonstration of what amateur radio and radio amateurs are capable of. Keep up the great work!



Sheffield Radio Point, Mt Roland in Background (photo by VK7ZZ)

BPL in VK7 – Aurora Energy's 2nd trial

The start of the BPL trial has been delayed one month. It is due to begin this month and will cover 500 Hobart homes. A mobile field strength team has been assembled and is ready for field measurements once locations are known. A VK7 BPL Watch web page has now been established on the Regional website. Take a look and become informed!

VK7 Divisional Honour Roll

At the WIA Tasmanian Division SGM in September 2004 it was agreed to fund the completion of the WIA Tasmanian Division Honour Roll. A draft has been compiled from records and is available for comment on the Regional Website. VK7 radio amateurs are invited to take a look and let me know any information that may assist in finalisation of the Roll.

Central Highlands Amateur Radio Club of Tasmania

The winter getaway weekend will be held at the Tiger Hut at Waddamana. It starts Friday July 22 until Sunday July 24. Comfortable accommodation is available for just $20 per night per person. The facilities are outstanding and include a well equipped community centre, complete with kitchen. BYO is the go. If you do need accommodation, it is important that you confirm a booking with David O'Brien, VK7KDO. Contact David by giving him a telephone call on (03) 6273 0642. We hope to see you there.

Don't forget the CHARCT quiz night, held every Thursday evening at 8.30pm, immediately following the Tassie Devil net that is ably run by Dale VK3YR. The frequency is 3.585 MHz.

North West Tasmania Amateur Radio Interest Group

Much work has been performed to improve Repeater 3, VK7RNW at Lonah thanks to Brian, VK7RR and Joe VK7JG for this work and equipment.

The club's callsign, VK7NW is now being used as the originating station for the delivery of the WIA National News, VK7 Regional News, Spectrum Tasmania and Q5 broadcasts.

A pictorial television version of Spectrum Newscasts, WIA National News & VK7 Regional News on DVD are now being produced. Anyone interested in copies of these DVD's should contact Spectrum via email to: spectrum@spamex.com

Brenton, VK7JB took club members on a guided tour of the TV Translators at Braddon's lookout and Melrose on Sunday 15th. May. Thanks to Brenton for a very informative tour.

The next meeting of NWTARIG is on Saturday 30th. July 2005.

Northern Tasmanian Amateur Radio Club

A working bee on VK7RAA occurred on April 21 with Joe, VK7JG, Allen, VK7AN and Norm, VK7AC climbing to the summit of Mt Barrow. The new antenna has greatly improved the repeater and many amateurs have been heard since the upgrade.

The installation of the APRS Digipeater (VK7RAA) on Mt. Barrow has made a marked difference to the APRS network coverage well down to the South, North East and North West of the State.

Next meeting of NTARC will be at the Alanvale campus of TAFE in the usual spot on June 8th starting at 7:30pm. All welcome. Come along and put a face to the voice.

Radio and Electronics Association of Southern Tasmania Inc.

On May 4, Rex, VK7MO gave an EMR assessment revisited talk. Rex has actually been audited by the ACA and provided some valuable practical experience and knowledge for club members.

REAST, like most amateur clubs, is endeavouring to attract more young people to the hobby. In doing so, all members, especially those organising activities, have a responsibility to consider and provide a safe environment and consider safeguards dedicated to the well being of young people. Child protection and the proper reporting of allegations has become a major social justice issue.

Knowledge followed by action is the best solution. After much research, including the taking of professional advice and deliberation, your Committee has developed a Child Protection Policy and Parental Consent Form.

The policy and form has been published on the REAST web site. We urge all member and potential members to become familiar with it. If you have any concerns, contact one of your Committee members.

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Plan ahead

Remembrance Day Contest
13 & 14 August

ALARA Contest
27 & 28 August

ALARA

Christine Taylor VK5CTY

Another interesting piece of history

(from the "New Scientist" for 5th March 2005)

Did you know that the plastic covered wire you use every time you start a new electronic project has its origins in women's hats?

At around the time Michael Faraday was doing his ground-breaking experiments in electricity women wore poke bonnets and other hats that required stiff brims. To keep the brims stiff hatmakers used iron wire that they wound with ribbons so that the wires would not rust and stain the hat.

Faraday took up the idea when he needed to insulate the wire he wanted to make his coils. He used copper rather than iron because of the relative resistance of the metals but he laboriously wound each length of wire with cotton thread or ribbon to insulate them from each other. The system worked but was very time consuming and tedious.

At approximately the same time a young man called Henley was experimenting in electric coils and motors. He did not have the helpers Faraday had at his disposal so he had to find a better way to wrap his wires. He invented a wrapping machine with a handle one person could turn that wrapped long lengths of wire fed continuously through a central hole. No longer was each length of wire wrapped separately.

Eventually with the development of machines powered by steam or electricity the basic principle of Henley's wire wrapping machines became the way all wire was wrapped. Underground and undersea cables are made this way. The principle is still the same now that plastic is extruded onto the wire. Here the wire to be covered is fed through a central hole while the plastic is extruded onto it.

And it all came to be because hat makers had to keep their iron wires from staining the ladies' hats.

The result of the ALARA AGM

There are some changes to the ALARA committee after the AGM this year which is the sign of a healthy association.

The new committee is:

President	Susan Brain VK7LUV
Vice-President1	Marilyn Syme VK3DMS
Vice-President2	Bev Hebiton VK6DE
Secretary	Margaret Schwerin VK4AOE
Treasurer/Souvenir Custodian	Margaret Schwerin VK4AOE
Minute Secretary	Bron Brown VK3DYF
Publicity Officer	Christine Taylor VK5CTY
Award Custodian	Kathy Gluyas VK3XBA
Historian	Shirley Tregellas VK5JSH
Contest Manager	Marilyn Syme VK3DMS
Librarian	Shirley Tregellas VK5JSH
Sponsorship Secretary	Maria McLeod VK5BMT
Editor	Dot Bishop VK2DB
VK1/2 rep	Dot Bishop VK2DB
VK3 rep	Bron Brown VK3DYF
VK4 rep	Dawn Sebben VK4HER
VK5/8 rep	Jean Kopp VK5TSX
VK6 rep	Bev Hebiton VK6DE
VK7 rep	Rosanne Webb VK7NAW

Please contact any member on the committee if you have any suggestions or complaints about matters to do with ALARA.

Silent key

George Douglas Smith VK4ASM

VALE George Douglas Smith VK4ASM from Wurtulla,Sunshine Coast.

Doug, as all knew him, became a silent key at 1810 hrs on 9th May, 2005 after suffering three strokes in one day. Doug, who was formerly known as VK6ASM, would have reached 83 on Wednesday 11th. Doug was a well loved regular on the daily Coral Coast net for many years.

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A plea from your reporters

If you have any news about your own activities or those of others which you would like to share with everyone, please contact either (or both) Christine VK5CTY for the AR column or Dot VK2DB for the ALARA Newsletter.

We really want to know what you have been doing and we really want to know about any special awards or presentations you have received. We can't know unless you tell us.

If there is anything in a newspaper, local or national, please send us a copy for our history. Sometimes we do know but sometimes we don't. Please tell us.

Even if your news has also come from someone else, we still want to know. If the news has been printed in another amateur publication somewhere in the world, either recently or a long time ago, that is also OK. There is an agreement between amateur publications that makes a free exchange of information acceptable as long as the source is acknowledged.

If it is from any published source (a book or magazine for example), please include the details so Dot and I can get permission to publish if necessary.

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Ron Broadbent G3AAJ, Silent Key

From RSGB news.

Ron Broadbent MBE, G3AAJ, died on 24 April at the age of 80. He was awarded the MBE for his services to amateur radio in 1995.

Ron joined the RSGB at the age of 19 and had been a member for over 61 years. He became involved with amateur satellites in the 1970s and by 1978 was secretary of AMSAT-UK, a post he held for 16 years.

He was made an Honorary Vice-President of the RSGB in 1994. Ron's career was with Trinity House, attending to the UK's lighthouses and lightships.

He retired in 1985 but thereafter worked almost full-time, 12 hours a day, seven days a week and virtually for free for the amateur satellite movement. One of his notable achievements was organising the AMSAT-UK Colloquium for over 10 years. A summary of some of Ron's achievements can be found on the AMSAT-UK web site.

At a personal level I'd like to add that although I'd never met Ron, he was like an old friend. In the early days of amateur radio satellites Ron was the "face" of AMSAT-UK. For many years it was Ron who you dealt with on all matters from articles for "Oscar-News" to software on floppie disks via the mail. Ron's responses were always precise and courteous with a humourous touch which endeared him to everyone.

His MBE was greeted with acclaim by all and his contributions will be long remembered.

Thanks a million Ron.

The AMSAT group in Australia.

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an e-mail mailing list for breaking news and such things as software releases. Contact Graham if you wish to be placed on the mailing list.

AMSAT-Australia Echolink Net.

The net meets formally on the second Sunday of each month. Anyone with an interest in Amateur Radio Satellites is welcome to join in and take part. Graham VK5AGR acts as net controller. The net starts at 0600UTC and you can join in by connecting to the AMSAT conference server.

All communication regarding AMSAT-Australia matters can be addressed to:

AMSAT-VK,
9 Homer Rd,
Clarence Park, SA. 5034

Graham's e-mail address is:
vk5agr@amsat.org

PCsat2

A month or two ago Bob Bruninga appealed for help in producing a telemetry web page for the up-coming PCsat2 experiment. David Johnson, G4DPZ rose to the occasion and the results can be viewed at http://www.pcsat2.info/PCSat2Web/

The site has been set up to display the decoded telemetry data from PCSat2, which is an external ISS experiment in the Amateur Satellite Service. It will be carried to orbit by the STS114 Shuttle mission and attached to the International Space Station by the Mission 11 crew. More details about PCsat2 and the whole project can be found at:

http://web.usna.navy.mil/~bruninga/pcsat2.html

The telemetry web site is still under development and is being fed from a telemetry simulator. When PCsat2 is installed on ISS and working, the telemetry will be relayed to the web site via the internet by a group of volunteer monitoring stations around the globe. By watching this page you can 'snoop' on PCsat2 at any time, not just when it's in your sky.

Launch of Hamsat

Back in April 2002 we got the first hints that something of special significance to amateur radio satellite operators was happening in India.

The AMSAT bulletin board was buzzing with news about a new project from AMSAT-India. It was to be called Hamsat or VUSAT. Hamsat was to take the shape of a 40 kg micro-satellite hitching a ride on a "Polar Satellite Launch Vehicle" being developed by the Indian Space Research Organisation.

At that early stage it was hoped to have the satellite in orbit some time in 2003. Well, time marches on, and after some delays Hamsat was launched successfully on 5th May 2005.

At the time of writing, Hamsat has been declared healthy. It will undergo a 10-day period of evaluation and commissioning and then be released for use by radio amateurs. There is plenty of up-to-date information available at the usual web sites to enable you to set up for this bird.

Special accolades go to William Leijenaar PE1RAH for his part in producing the "Dutch" transponder. William has worked tirelessly on this project for a number of years. We wish Hamsat a long and productive life in orbit.

SatPC32 tracking program

I've been thinking about evaluating the latest version of this tracking program for some time. There have been some favourable comments recently on the bulletin board, in particular regarding the level of support offered by the program's author Erich Eichmann, DK1TB. This prompted me to gird up my loins and download the trial version. The file is over 8MB long so it took about an hour to download on my clickety-clack dial-up system but it came through OK and installed without any hitches at all.

I can't offer any comment on the level of support as nothing has gone wrong yet but I can say the documentation is very good and appears to be comprehensive. I had no trouble setting up the options and it worked straight away.

The screen is colourful with a detailed map offering either Mercator-type or 3D views. Floating menus help to make sense of the many features under button control from the main map screen. The map can be adjusted from 640x480 to 1024x768 size.

The normal view shows the footprint of just one satellite but up to 9 satellites can be displayed simultaneously, their direction of travel being displayed as an

arrow. This is a handy feature as it shows when satellites are likely to be coming your way without cluttering up the screen with multiple ground tracks.

SatPC32 has all the usual features we have come to expect from modern tracking programs. It features a CAT interface for tuning Doppler compensations. This includes the ability to keep track of uplink and downlink frequencies even for "in-band" work such as ISS where simplex mode is employed using two different frequencies in the same band. The CAT interface works with a selection of modern amateur radio transceivers.

SatPC32 includes an antenna pointing driver for several of the more popular auto-track units including the Kansas City Tracker / Tuner and FODtrack.

I was quite impressed by this latest version and you may like to try it yourself. It can be downloaded from Erik's web site which can be reached by typing satpc32 into Google.

Mode S on AO-51

Lots of people freak-out when you mention microwaves and S band. Working the high orbiting birds on this band does involve some fancy footwork with dish antennas and high gain, low noise receive preamplifiers - all good stuff - but the Mode S downlink on AO-51 does not require such a large investment in equipment. Even portable station operation becomes a possibility.

A satellite dish is not required to operate this mode on AO-51. The S band downlink can be copied using quite simple antennas which because of their small size and wide beamwidths can easily be held and aimed by hand. AO-51 is a low earth orbiter and its signal is strong. A corner reflector for S band is only about as big as the covers of a paper-back novel and such an antenna can be used for contacts on AO-51. Small helix antennas using as few as 3 or 4 turns are also useful. Naturally a longer helix would bring in better signals but not so long as to present a problem with aiming. I have several S band helix antennas and I plan to do some tests in a month or two by cutting one back a turn at a time to see what would be the ideal length compromise between gain and beamwidth. I'll write the results of that test in this column. Such tiny antennas are easily held in one hand while the uplink antenna can be some sort of non-steerable, all-sky antenna like a vertical or a quadrifilar helix or Lindenblad.

Of course Doppler shift variations can be a problem, up to +/- 50 kHz on an overhead pass, but this will just serve to keep you from becoming complacent, hi. It's quite permissible to resort to some sort of electro-mechanical (ie. computer) help.

AMSAT'S External Relations Team

What's that? I hear you say.

There are forces at work in the wider satellite community that can impact heavily on amateur radio satellite operations.

To mention just two of these: Firstly the increasing worry among authorities regarding "orbital debris". The near-earth space environment is in danger of becoming quite congested. Rules have been foreshadowed regarding the ability of satellite owners to de-orbit non-functional satellites as a pre-condition of launch. This would certainly have impact on our designs and costs.

Secondly the problem of launch opportunities is something that has to be constantly monitored. AMSAT-NA has formed an "External Relations Team" to address the above matters and to handle interactions with outside groups such as government agencies, launch providers, educational groups as well as other amateur radio and AMSAT groups around the world.

This Team has been busy preparing for several upcoming events. One such event is the "Small Payload Ridesharing Conference" to be held in Denver this year. The focus of this conference is developing increased launch opportunities for small satellites and secondary payloads.

Another up-coming event is the combined Cubesat workshop and Small Satellite Conference in August. This year AMSAT will have a table in the exhibitor area at that conference. Much useful PR should result. The team is very busy in areas of great importance to all satellite users. Their work will help smooth the way for the continuation of the amateur radio satellite scene into the future.

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LAST CHANCE

to change information in the 2006 Callbook

Make sure changes to Callsign details reach the ACA by 30 June

Send changes to:

email: callbook@wia.org.au

post: PO Box 2175
Caulfield Junction 3161

Technical abstracts - Mounting Yagis *continued*

However, if you route your coax along the boom and back down your non-conductive mast (Figure 7), you have accomplished nothing. To the antenna, the coax looks just like a metal tube. One solution to this is to route the coax out the back of the antenna and back to the mast in a big loop. Electrically this works well. However, mechanically this is a poor solution. Tail heavy and with a weak mast, they can flop around and break.

With all of the above information, what is the best way to mount a vertical Yagi antenna? End mounting is best, but is limited to small antennas. For bigger antennas, using an additional cross-boom to move the antenna away from the mast and feedline (Figure 8) will give the best results. If you can get the Yagi even a ¼ wavelength away from the mast, it does wonders for the pattern. A half wavelength or more is even better if you can manage it

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Beyond our shores

David A. Pilley VK2AYD
davpil@midcoast.com.au

U.S.A.

Morse restructuring

It seems to be a long way off in the U.S.A.

The FCC continues to work toward developing a Notice of Proposed Rule Making (NPRM) that will spell out what the Commission has in mind with respect to possible changes in the current Morse code requirement and Amateur Radio licensing.

Eighteen petitions have been filed. As far as the code issue is concerned, petitions--and comments in response to them--run the gamut from retaining or even beefing up the Morse requirement to eliminating it altogether. (The ARRL's proposal would retain the 5 WPM Morse examination for Amateur Extra class applicants only.) The League and others have also put forth proposals for a new entry-level Amateur Radio licence class.

The FCC appears unlikely to release an NPRM any sooner than mid-2005. Once public, the NPRM will initiate yet another round of public comments--this time on what the FCC has proposed. An FCC Report and Order to implement any new rules regarding Morse code and licence restructuring is unlikely before the second half of 2006, although it's possible the Commission could wrap up the proceeding before then.

(ARRL News)

Germany:

Changes in amateur regulations

Germany has recently announced changes in their Amateur Radio regulations. Some revisions stem from the outcome of World Radiocommunication Conference 2003, which essentially left it up to individual countries to decide if they wanted to continue to impose a Morse code requirement for HF access.

In Germany, the Deutscher Amateur Radio Club (DARC) reports that, effective February 19, there now are only two classes of Amateur Radio licence: Class A (formerly Class B and C) and Class E (formerly Class D). The new Class A works in accordance with the Harmonized Amateur Radio Examination Certificate (HAREC), T/R 61-02. It permits radio amateurs in participating European countries to go from one European nation to another and obtain a full licence.

Long time visitors or foreign residents with a CEPT licence in Germany will be issued a German Class A licence. The Class E licence remains limited to VHF/UHF frequencies only, with the addition of 10 GHz, output limited to 10 W EIRP. There also have been some changes to the spectrum allocation at 1.8 MHz. The text of the new regulations, in German, is available on the DARC Web site <http://www.darc.de/aktuell/afuv.pdf>.

(ARRL N/L 11/05)

Spain:

Changes to their licence

In Spain, the Unión De Radioaficionados Españoles (URE) reports two significant changes in that country's Amateur Radio regulations, effective March 3: Spain has deleted the Morse code requirement to obtain a Class A (General) or Class C (Novice) licence. Also, Class A (General) and Class B (Restricted) licencees now are allowed to use the band 50.0 to 51.0 MHz "under special and particular authorization."

(ARRL N/L 11/05)

Ham radio in space:

Tracking CubeSats

Hams interested in space telemetry reception are invited to participate in a world-wide effort to support student groups that have designed and made CubeSats. These are satellites measuring 10 centimetres cubed and weighing less than 1 kilogram. A discussion group and a new website have been created to provide information on these educational CubeSats. They are at http://groups-beta.google.com/group/CubeSat and http://users.crosspaths.net/wallio/CubeSat.htm respectively.

(GB2RS)

Cyprus

Expanded 40 metre band

Hams in Cyprus have been given more spectrum on 40 meters. This, with word that Cypriot amateurs may now use 7.100 to 7.200 MHz in addition to 7.000 to 7.100 MHz they already had.

With this action, amateurs in Cyprus join those in the UK, Ireland, Croatia, Switzerland, Norway, Denmark, San Marino and Iceland who already have access to 7 point 100 to 7 point 200 MHz. The expansion of the 40 meter band is included in the Cyprus Department of Electronic Communications National Frequency Plan which has been posted on the Internet at www.tinyurl.com/528wx. It's in Adobe pdf file format.

(GB2RS)

Norway

Norweigan club stations get 5 MHz

And those are Norwegian club stations being heard at 5 MHz. This with word that Norway has granted club operations access to a number of 'channels' on 5 MHz. effective at midnight Norwegian time on 1st April.

At least two Norwegian stations were active from the outset. They are LA2AB near Oslo and LA1K in Trondheim.

The LA2AB operators had a good opening night. They worked two other Norwegian stations, five stations from the USA and numerous operators across the UK.

Eighteen club stations in Finland also have special licences to operate on 5 MHz frequencies.

(GB2RS)

S.O.T.A.

Summits on the air

We had IOTA , now we have SOTA.

Last month a group of enthusiasts in the UK operated from 29 summits around England, Scotland and Wales and founded the beginnings of a future challenge and perhaps in the long term, a new contest. There are currently 11 SOTA Associations. Most are in Europe and they are now wanting to expand world-wide. So here is an opportunity for you to be the first VK SOTA station and operate this winter from the Snowies! Have a look at http://tomread.co.uk

Awards

Malcolm K. Johnson VK6LC
WIA Awards Manager

WIA 3 & 5 Band DXCC Program Official Release

The WIA officially releases its new 3 & 5 Band DXCC Program and invites submissions for these new awards.

Introducing the 3 & 5 Band DXCC program has taken the WIA just over 1 year to develop, finance and to deliver these new exciting challenges to our membership.

This completes our DX stepping stone from Single Band DXCC progressing up to 3 Band and 5 Band DXCC, extending to a new Multiband Program that includes all 11 approved bands.

Smart computerised documents have also been designed and trialed with over 40 DX members spread across Australia and Overseas.

New administration rules have been established. The Australian DXCC "entity" bench marks were also reviewed for all MultiBand Awards and are approved by the WIA Board.

The new awards have been developed incorporating sponsored, financial and legal graphic support. While they are not difficult to achieve, they will require dedication in DXing and Qsling.

3 Band DXCC program (3BDXCC):

This Certificate includes a choice of any 11 Band-modes from 2m to 160m.

They are available in Single or Open Awards. Deleted entities do not count for this award.

Honour Roll bench mark is set at 700 and DXCC Excellence bench mark is set at 900.

Individual progress achievement awards are from 350 to 1000 entities.

5 Band DXCC program (5BDXCC):

"Classic Award"

This Certificate includes only the "Traditional Bands" 5 Band-modes 10, 15, 20, 40 & 80m.

They are available in Single or Open Awards. Deleted entities do not count for this award.

Honour Roll bench mark is set at 800 and DXCC Excellence bench mark is set at 1000.

See WIA Awards Program certificates in full colour on inside back cover

Individual progress achievement awards are from 550 to 1200 entities.

"Premier Award"

This Certificate includes any choice of 11 Band-modes from 2m to 160m.

They are available in Single or Open Awards. Deleted entities do not count for this award.

Honour Roll bench mark is set at 900 and DXCC Excellence bench mark is set at 1100.

Individual progress achievement awards are from 550 to 1200 entities.

MultiBand DXCC Program (MBDXCC):

Our current DXCC single band "DXCC Standings" will be joined by the new "MultiBand DXCC Program" this will extend the performance over all bands. This new program should be ready for publication by the end of this year. The simple format will be to totalise all bands.

The minimum entry is 100 confirmed entities "Open" for each respective Band, excluding deleted entities.

The "WIA DXer" for 3 Band and 5

continued on page 46

WIA Multiband DXCC Program

Typical sample only

Ending 30th April 2005

Callsign	2m	6m	10m	12m	15m	17m	20m	30m	40m	80m	160m	Total
CT1EEN		110	294	290	324	305	328	146	243	163		2203
VK3EW			273	220	307	246	330	129	294	285	102	2186
VK1TX			101		212	200	306		100			919
VK5WO			139		146		226		242	131		884
9V1RH				141	264	119	222		129			875
VK3PA			133		139		253		136	187		848
VK6LC			109		131		301		166	106		813
VK2CA			158		196	100	193					647
VK4EJ			123		275		245					643
VK2DEJ					118		312		106			536
VK3KE			103		148		267					518

Ian Godsil VK3JS

Contest Calendar June - August 2005

June	4	VK/trans-Tasman 80m CW Contest	
	11	ANARTS WW RTTY Contest	(Digi)
	11	Portugal Day DX Contest	(SSB)
	11/12	South America CW Contest	
	11	Asia-Pacific Sprint Contest	(SSB)
	18/19	All Asian DX Contest	(CW)
	25/26	Marconi Memorial HF Contest	(CW)
July	1	Canada day Contest	(CW/SSB)
	2	Jack Files Memorial Contest	(CW/SSB/PSK31)
	9	VK/trans-Tasman 160 Metres Phone Contest	
	9/10	IARU HF World Championship	(CW/SSB)
	16/17	CQ WW VHF Contest	(All modes)
	23	VK/trans-Tasman 160 Metres CW Contest	
Aug	5	QRP Day Contest	(CW/SSB/FM/PSK31)
	6	TARA Grid Dip	(PSK/RTTY)
	6/7	10-10 Intl QSO Party	(SSB)
	13/14	Remembrance Day Contest	(CW/SSB/FM)
	20/21	Keymen's Club of Japan Contest	(CW)
	20/21	SEANET Contest	(CW/SSB)
	27	ALARA Contest	(CW/SSB)
	27/28	TOEC WW Grid Contest	(CW)
	27/28	YO DX HF Contest	(CW/SSB)

Greetings to all Readers

The year is certainly on the march again and already there have been some important VK contests held. I hope that you made an effort to support them, but if not then there are more to come!

Jack Files Contest

This contest has been run for many years as a memorial to the late Jack Files, a long-serving VK4 WIA Councillor who did a lot to help the cause of AR and the WIA. Like some other VK contests, the event has not been well-supported over the last few years, so that now is a time for change.

The organisers and Manager, John Spooner VK4AJS, would like to invite ALL amateurs in both VK and ZL to take part in this contest, which has now been brought under the auspices of the new National WIA. The rules are below.

I believe that the original trophy was misplaced for some time but has now been found, so this will be polished up and made available for display.

When you look at the Calendar above, this Jack Files Contest will fit nicely into the other local contests – a group of VK events early each month, culminating in the RD and ALARA contests in August.

All of these are "non-threatening" contests in that they do not take a great deal of effort to enter. Some effort, yes, but not like the 24/48 hours DX contests where every call counts and the competition is fierce.

Contest Future

We know that contesting in this country has never been highly regarded, but my theme has always been that they could be much healthier than they are simply by SOME participation by MORE operators.

If, on the other hand, you would like to see contests eliminated from the airwaves, then just wait a while. My prediction is that with the attitude shown by VK amateurs collectively to operating, not just in contests but on-air in general, there will be no Amateur Service in this country within the next ten years.

Think about that! Is that what you really want? No longer can one claim an inability to learn Morse as an excuse (by the way, what would those people have done had they lived in WW2 times and had wanted to be in Signals?). There are other modes easily useable on-air and yes there are sometimes contests for those modes.

An example that comes to mind is the IRLP Contest held in March-April. Details of this were in AR and on the Web, but I doubt that more than 15 VKs took part in the event, even though it ran for ONE MONTH. I know that Graham VK3JBO scored over 200 contacts and yes he is the node owner, so perhaps you could argue that he HAD to keep an ear on his node. This is specious, in fact, as any operator could have called in and taken part. Graham did a wonderful job in keeping his node connected to many places throughout the world for the duration of the event. Congratulations Graham and thank you for promoting this contest.

Summary

My plea to all VK amateurs is to WAKE UP and be more active or we shall not have any Amateur Service in this country in the foreseeable future. Already the ACA has thoughts about the use of spectrum for other purposes. Please ask your local ACA office about this, or check the web site www.aca.gov.au Don't think Oh, the WIA will fix it all up. The WIA is busy doing what it can now, but if ACA says "Service Terminated", then that will be it – Service Terminated!! It rests with YOU.

73 and good contesting,

Ian Godsil VK3JS
Federal Contest Co-ordinator

Jack Files Contest 2005

2 July 2005

from John Spooner
VK4AJS Contest Manager

This contest is in honour of the late Jack Files, a long-serving VK4 WIA councillor. It is coordinated by the Queensland Advisary Comittee and is sponsored by the WIA.

Since the dissolution of the WIA divisions within Australia and the establishment of a national body, it has been decided to make this contest a national remembrance of an amateur who gave long service not only to benefit Queensland amateurs, but to all amateurs within Australia. So a slight change of the rules for this year's contest has been implemented to open up this event to all VK Amateurs. The object is still to work as many different stations in different Queensland shires and towns for the purpose of multipliers, but in addition to this all participants will be able to count the first VK state or territory worked in each one hour block of the contest as a multiplier. Also, provision will be made for the working of the same station within the same one hour block if one or both of the stations are mobile and are passing through different shires, towns, states or territories.

Object is for amateurs to work as many other amateur stations, and particularly as many different VK4 shires and towns, as well as many different states and territories as possible within each one hour block of the contest.

Date: Saturday, 2nd July, 2005

Time: 0800UTC – 1400UTC in six one-hour blocks for the purpose of duplicate contacts.

Band: 80 metres only. Use 3.5MHZ – 3.7MHz to put all licence grades on an equal footing.

Modes: Either CW; SSB; PSK31, or All Modes

Categories: Single Operator; Club Station (each category can be a mobile station)

Exchange: Non-VK4 stations will send RS(T) plus serial number starting at 001 and incrementing by one for each contact. VK4 stations will send RS(T), serial number and two-letter shire or town code for purposes of multipliers.

Score: One point per contact

Multipliers: Each VK4 Shire or Town counts as a multiplier only once over the entire duration of the contest. All participants may also count the first contact in each state or territory as a mutiplier and these may be counted within each one-hour block during the contest.

Final Score is total QSO points X total number of multipliers.

Repeat Contacts: In order to make best use of the band, stations may be contacted once in each hour on each mode. Repeat contacts with stations may be counted within the same one-hour block only if the station is mobile and crosses from different shires, towns, states or territories to another. Repeat contacts must not be consecutive.

Logs must show full details of all QSOs and must be accompanied by a Summary Sheet showing operator's name; address; callsign; category and mode entered; claimed score and a declaration that the rules and spirit of the contest were observed.

Send logs by mail to: Files Contest Manager, PO Box 1006, Yeppoon, 4703. Logs may be sent by e-mail in text format to: vk4ajs@optusnet.com.au

Closing date for all entries is 2nd August, 2005

Certificates will be awarded to the top scorers in each mode in each VK State, ZL, P29 and any DX country (i.e. country outside VK, ZL or P29). As well, there will be a special certificate awarded to the overall highest VK scorer who will be declared overall contest winner. The only stipulation is that the overall winning operator must be a VK amateur.

Asia Pacific DX Convention

Dear Fellow DXers and Contesters,

You are cordially invited to the Asia Pacific DX Convention, which will take place November 18 through 20, 2005 as the first Asian International DX event.

In addition to the presentations of recent DX-peditions, technical sessions, displays, etc. that you find at most large DX conventions, this convention offers something special? such as a tour to the Icom factory, a technical session led by the Icom IC7800 design team, a tour to the electronics district, and more? since it is being held in the country in which most of the amateur radio equipment is developed.

For the non-hams accompanying you, activities to enjoy Japanese culture, such as tea ceremony and flower arranging, are being prepared.

We would appreciate your introducing this convention to your DX/contest club members. See our website for more details at: http://www.ja3.net/apdxc

For convention updates, please visit the website and send an e-mail to subscribe to the APDXC newsletter.

We look forward to welcoming you at the APDXC in Osaka, Japan.

APDXC Committee / JA3USA

25th ALARA Contest 2005

Australian Ladies' Amateur Radio Association Inc.

A0031101B

27 & 28 August , 2005

Celebrating 30 years since the founding of ALARA with *special points for contacts with original ALARA members*

ELIGIBILITY: All licensed operators throughout the world are invited to participate. Also open to SWLs.

OBJECT: Participation: YL works everyone, OMs & Clubs work YLs only.

One contest (combined phone and CW) run over 30 hours.

STARTS: Saturday 27th August 2005 at 0600 hours UTC

ENDS: Sunday 28th August 2005 at 1159 hours UTC

SUGGESTED FREQUENCIES: Bands to be used are 3.5, 7, 14, 21, and 28 MHz only. The following are suggested frequencies for easier location of contacts:

28.380 to 28.410

21.170 to 21.200 and 21.380 to 21.410

14.250 to 14.280

7.070 to 7.100

3.560 to 3.590

OPERATION:

* Every individual phone or CW contact may be counted.
* There must be an interval of greater than 1 hour between contacts with any one station on any one band and in the same mode.
* No net or list operations
* No crossmode operations.
* No crossband operations.
* All contacts must be made in accordance with operator and station licence regulations.

PROCEDURE:

Phone: call "CQ ALARA Contest"

CW: YLs call "CQ TEST ALARA"

OMs call "CQ YL"

EXCHANGES: ALARA member: RS or RST, serial no. starting at 001, ALARA member, name.

ALARA members who joined before 1980, please advise all your contacts

YL non-member,

OM or Club: RS or RST, serial no.starting at 001, name, and whether Club station.

OMs, Clubs & SWLs work YLs only.

SCORING:

Phone: 5 points for ALARA member contacted

4 points for YL non-member contacted

3 points for OM or Club station contacted

CW: All contacts made on CW count for double points

OM, SWL, 5 points for ALARA member logged

CLUB: 4 points for YL non-member logged

and

a special for this year only:

Contacts with ALARA members who joined prior to 1980

multiply the above points by 3

LOGS: Single log entry. Logs must show date/time UTC, band, mode, callsign worked, report & serial no. sent, report & serial no. received, name of operator of station worked, whether it is a Club station, and points claimed. (See Sample Log this page)

LOGS MUST BE SIGNED. Logs also to show full name, callsign and address of operator, and show final score (points claimed). Logs must be legible. No carbon copies. No logs will be returned. Decision of the Contest Manager will be final, and no correspondence will be entered into.

Logs must be received by the Contest Manager by: 31st October, 2005.

CONTEST MANAGER:

Mrs. Marilyn Syme VK3DMS

99 Magnolia Ave.

MILDURA. 3500

VIC. AUSTRALIA OR:

alaracontest@wia.org.au

CERTIFICATES will be awarded for the following:

Top score overall

Top score phone only

Top score Australian YL CW

Top score ALARA member in each country and VK call area

Top score YL non-member in each continent

Top score OM in each continent

Top score SWL in each continent

Top score VK novice

Top score overseas YL CW

Top score VK Club station

TROPHIES will be awarded to the following:

Top scoring Australian YL

Top scoring DX YL

CLUB STATIONS: Operators of Club stations may use the Club call only for contacts, and MUST identify each contact as with a Club station. Use of personal callsigns while operating as a Club member is not permitted.

Sample Log:

Date UTC	Time UTC	Band MHz	Mode	Callsign	RS(T) & Serial No. Sent	RS(T) & Serial No. Rcd	Name	Points
30/08	0135	28	SSB	VK6DE	59001	58028	Bev	5
	0141	21	CW	VK3KS	599002	599045	Mavis	30
	0600	14	SSB	FK8FA	59025	59011	Aimee	5
	1100	3.5	CW	VK7LUV	599129	599004	Susan	10
	1103	3.5	SSB	VK3BSP	59130	59006	Joe (Club)	3

Over to you

BPL interference

The probable instigation of Internet and other digital information over powerlines in the frequency range to around 10 MHz will almost spell the doom of HF radio communications throughout Australia - not just areas where the BPL is projected to be in use. I will give you an example of the problems from personal experience.

Back in the early 1960s I lived on the Victorian/South Australian border at Kaniva. I was a volunteer operator on the HF CFA radio network. We were experiencing power line interference from time to time, but had no idea why we were getting interference of this nature as there were no high voltage power lines within perhaps 50 kms. This was well before the SEC had reticulations right throughout Victoria. We dismissed it as some thing that had no explanation.

A number of years later I joined the Radio Branch of what is now the Australian Communications Authority and became a Radio Inspector. Over a period of time I became quite proficient at solving interference problems on frequencies from around DC to around 1 GHz. The problem of the HF interference I'd experienced on the CFA network had always puzzled me as I had no answer but my experience as a Radio Inspector ended up providing me with the answer. As most amateurs know interference from power lines will wreck radio coms in the near vicinity. But hey, it is a broadband HF transmission using a VERY good HF antenna in the form of power lines. We use the ionosphere for our long distance transmissions and the interference will do the same, hence our problems with the CFA HF radio interference.

This means of course that the BPL will cause the noise floor to rise throughout Australia not just in areas where the power lines are in close proximity. It may mean that 1 µV signals can no longer be heard only signals above 10µ V, even in outback areas! In town areas the noise floor may rise to 1 millivolt or more. Digital garbage does not sound like powerline interference, probably just a hiss, your S-meter just rises up the scale. I suspect it will be difficult to trace to its source too.

I understand that PBL is to be trialed in Tassy (maybe already by the time this letter appears in print) where there are few HF services. I've also heard said that the organisations wanting to use PBL are pressuring the ACA/Government to amend the Radio Communications Act so that users cannot complain about interference caused by the PBL usage.

Complain to our politicians about this money driven idea that has scant thought for those disadvantaged by it. It is something we must do before it is too late.

Discrepancy in size descriptions

I've read the excellent antenna construction articles, by Drew Diamond and others, in recent editions in AR, and noted with some consternation the perceived discrepancy in size descriptions for plastic (UPVC) water pipe.

For those who are not aware of the reason, here it is. Water pipe - be it plastic or steel - is manufactured not with us amateurs in mind, but for for those in the business of transporting water (and other suitable liquidy things). Their focus is on the capacity of the pipe. Therefore, all their pipe sizes relate to the inner diameter of the pipe (called the Nominal Bore size) - not the outer diameter.

The outer diameter can vary within a single bore size, depending on whether the pipe is for high pressure or low pressure use. High pressure pipe will have a greater wall thickness, and therefore a larger outer diameter, than low pressure pipe.

There are two ways around this when choosing a pipe size: Either become very familiar with the standard Nominal Bore sizes, and the range of wall thicknesses, and make your calculations to suit prior to going out and purchasing; or arm yourself with a trusty micrometer and steel yourself against the glare of the salesperson, as they watch someone they suspect will misuse and maltreat their precious water pipe make a selection.

Barry Miller VK3BJM

Shopping by Internet

Having retired in the last couple of years, I have been giving increasing amounts of time to ham radio, restoring an old New Zealand Army ZC1 MKII transceiver, recapping power supplies for Collins and Drake gear, aligning receivers, and branching out into new technology, such as building a VFO using DDS chips.

All of this necessitates finding components, for which I use the facilities offered by the Internet.

My sad observation is this, that despite a number of Australian supplier websites that are well designed and easy to use, many are deficient in design or technical and price information. However, the worst feature is the number that simply do not respond to e-mails asking for further information. I have found that some of the U.K. sites are similar. One U.K. business in particular, which manufactures rather nice morse keys, has had problems with its online ordering software for several years. I have politely written to them several times and have not received a reply, nor have they fixed their site. Fortunately, I found one of their keys practically brand new on eBay for about half the new price.

I just do not understand how it is that many U.S. businesses have excellent websites, are quick to respond to e-mails, and promptly deliver goods, yet some Australian and U.K. businesses do not seem to realise the potential of the Internet nor do they seem to realise that importation direct from the U.S. can often be less expensive than buying locally because of the generally higher markups here.

Kevin B. G. Luxford VK3DAP/ ZL2DAP

The views expressed in the *Over to you* column are those of the authors, and do not necessarily reflect the official policy of the Wireless Institute of Australia.

DX~ News & Views

VK4OQ
P.O. Box 7665,
Toowoomba Mail Centre, QLD 4352.
E-Mail: john.bazley@bigpond.com

It is several months since Amateur Radio published a DX column. In the past few months there have been occasional requests from members that it should be re-instated. There is no doubt that DX is alive and well in Australia – you only have to look at the DXCC listings in the January/February WIA magazine, so perhaps the need is there. Well I have volunteered for a period of 12 months, at the end of which, hopefully we will know whether or not you want the column to continue!

I will endeavour to draw attention to planned DXpeditions and report on DX activity generally. Remember the column is for your benefit and therefore I am interested in hearing your News AND Views on DX related matters, so please feel free to either write to the above address or send me an e-mail.

In spite of the continued decline in the sunspots we have, in the past few months, had some excellent DX, with activity from some rare spots. I was asked recently what are the criteria that make an area rare? To me 'rarerity' of DX really depends on how far you are away from the station needed – band conditions and the amount of activity from that area. How would you define a rare spot?

During the year a number of organisations solicit 'Most Wanted data ' for the benefit of those dedicated travellers interested in operating from 'Wanted' DXCC entities. So what are your 20 most wanted countries? Let's have a list from Australia. It will be interesting to see if Bouvet or Kure top the list!

So what has happened in the past few months? The most disappointing news was the postponement of the Peter 1 Island trip. I say postponement for I understand that it is still hoped to activate Peter 1 in 2006. I am sure that we will get plenty of advance publicity.

Looking back during the past few months as I started to write this, I was amazed at the number of DXCC entities that have been activated.

The top spot must undoubtedly go the amateurs who put the Andaman Islands back on the air and the wonderful assistance that they provided following the Tsunami.

The second I think was the operation from Kergulen Islands.

The DXCC countries activated by visiting amateurs in the past few months include (I say 'include', for quite unintentionally I will undoubtedly have missed someone !) A25,A5,BV,C5,C6,CP,CT3,CU7,D2,FG,FM,FY,GJ,GU,HB0,HC,HH,HL,HV,JD1O, J6,J7,J8,JW,KH0,KH5,KH8,KP2,LX,OA,OH0,OJ,OX,P4,PJ7,PY0F,S7,S9,SO,SU,TF,TT,TU,TZ,V3,V5,V7,VP5,VP2V,XV,XT,ZA,ZB2,ZD8,ZF2,ZK1N,ZK1S,ZK2,ZL7,3B8,3D2,4U1UN,5T,5Z,7X,8P6,8R,9H,9N,9Y.

Is HK0 Malpelo on your wanted list? HK1XX is organising a return trip sometime between June 2005 and March 2006.

K5LBU is putting a team together to activate 3DA Swaziland for ten days in July. He hopes to have six operators – 3 CW & 3 SSB . If you are interested in joining this Dxpedition then contact him at-- frosty1@pdq.net

Twelve operators from Canada and the US are planning a trip to CY9SS St Paul Island between June 7th and July 7th. They plan to have two stations on HF, two for 6 metres and one on 2 metres. QSL to VY2SS.

PA7FM reports there is good news for DXers needing Chad on a few more Bands or still as a new one. The "Working DXpedition" to Chad, TT8M and TT8AMO, has been extended for at least two more months. The operation was originally scheduled to end on the 12th May. It now looks as though it will last until sometime in August, or even later. There will be more 6m operation starting in mid-June when TT8M will take a 6 m yagi provided by the U.K. Six Meter Group to Chad, after a holiday at home. Each of the two ops will take turns, having an off-duty month, apparently out of the country and back at home. Michael will be trying to get authorization to use digital modes, his current license being limited to CW and SSB. TT8AMO will operate CW only. TT8M will be on all modes and 6 m. There are now 9,000 QSOs in the logs, combined, including 228 on 160 and 1171 on 80. It appears the 160 and 80 part of the operation will remain over and done with. With the operation extended, Michael and Pierre will not wait until the operation is over to get QSL cards printed. They will start that process moving right away. QSL both TT8M and TT8AMO via PA7FM. Remember, one U.S. dollar does not cover the return postage from Europe to outside Europe, so US$2 will be needed. (If you still need TT8 on 40 metres then look for TT8AMO who likes the low end of 40 metres around 2000 GMT) There is a log search facility up and running.

Sudan ST2BF (ex D2BB), Fernando, is settled in to his new QTH in Sudan, and has been enjoying excellent propagation. He has a Kenwood TS-50, a modem for the digital modes and a 3 element triband yagi. Fernando has only put up antennas for 10, 15 and 20 metres. Someone has been pirating his call on 40 CW. QSL via W3HNK.

OH5NKD (OH3DD), Janne, has been working in Angola for several months now and QRV from Angola as D2DX. He is expected to be there until sometime in 2007. His plans are to be active on all bands and modes. Janne is currently starting construction of antennas for the low bands. Recently his radio broke but he has now replaced it with a brand new Icom.

F6FVX, Luc, is going to be on the air from Benin (TY), West Africa, this summer. Look for Luc on the bands from August 23-September 4.

Several Italian amateurs are planning an expedition to East Kiribati T32, between September 28-October 15.

So that about 'wraps up ' the first month. Comments please by the 8th July for August Amateur Radio – yes that date is correct!

Special thanks to the authors of The Daily DX (W3UR) and 425 Dx News (I1JQJ) for information appearing in this months DX News & Views. For interested readers you can obtain from W3UR a free two week trial www. dailydx. com/order.htm

Awards

continued from page 41

Band classes will be awarded the WIA Awards Program annual Certificate. The closing date will be 31st. December each year, this can only be awarded to the same person once in every 3 years. These awards will be presented by the WIA President and issued to both VK and DX entries. We are still looking for DX Trophy sponsors?

A typical listing is shown on page 40.

Certificates

These are truly outstanding, colourful and have a world class identity, the best we have ever been able to produce. All of these awards are graphically designed for A4 (210x297) with an extended border to A3 (297x420) thickness 200gsm Colortech. Progress achievements, Honour Roll and DXCC Excellence self adhesive award labels are all designed complete for these awards.

The costs of these awards are listed and shown separately in "Award Fees", page 47 of this magazine.

The WIA Awards are the leading edge with this program, setting pace with the world and creating a mile stone for our National Radio Society 2005. You can also be very proud of this.

We thank our progressive WIA Board members 2005, all review assessors, our financial sponsor "VK Classifieds", contributions from the VK6 Division Council, VK. DX members and the certificate backdrop sponsor "SSEC/UW-Madison" for supporting this wonderful project.

The new certificates are shown on the inside back cover page of this magazine.

Alternatively they can be viewed on the National website along with all down loadable smart document log and application sheets.

For those who prefer manual applications this package can be printed and posted at a cost.

Website: http://www.wia.org.au/awards/

email: awards@wia.org.au

Postal address: POB. 196, Cannington. 6987. Western Australia.

Please enjoy your DXing, be very proud of your achievements and display your award with pride.

Malcolm K. Johnson. VK6LC
WIA Awards Manager

Members' comments on the new Awards:

I think its a great step forward for the DXCC program here in VK.

A single band DXCC is hard enough, but a 3 or 5 band really raises the bar for the avid DXER. It also puts the WIA up there with the ARRL and CQ mag who already offer 5 Band DXCC.

The 3 Band DXCC is a very achievable goal for many. I know I have worked over 100 countries on 10, 15 and 20. Getting them confirmed, as you know, is always a challenge!

John VK6HZ/VK6KK

An appropriate move in the light of the reformation of the WIA.

Never having been an Awards Manager I can only venture a layman's opinion of the new ideas.

The certificates are of a nice design and colour but maybe could be a little bigger than the usual A4?

The 3 Band, 5 Band and Multiband DXCC program rules are quite detailed as they should be but maybe an abbreviated version could go into Amateur Radio.

Nice to see 6m mentioned

No detailed criticisms as I don't know enough about the subject but someone has put a deal of work into the new ideas.

Bevan VK4CXQ

At last our very own "VK" Multiband DXCC Awards. I'm sure all of us interested in the DXCC awards program will be chasing these awards. The 3 5 and 8+ won't be easy to achieve, but will be worth the effort . Congratulations to "VK" awards manager, VK6LC Malcolm Johnson for all his time and effort spent, in making this possible.

Dick Moore VK5ATU

This is good forward thinking and it will increase interest in working new countries on the different bands in the DX ranks of the younger and new operators.

I know it will take sometime to work through the early stages with some changes to be made and some fine tuning; but with patience a good outcome should be achieved in the long run. I certainly will be participating in the program and wish it success.

Austin VK5WO

A good idea, particularly the 3-Band award - I think that should create quite a bit of interest, hopefully anyway. Just a bit of a nuisance having to drag out all one's cards to be checked and then return them to their original places. Still, you don't get something for nothing!

Gwen Tilson VK3DYL,

What a great idea having not just a 5BDXCC! This allows most HFers a shot at a new certificate with the 3 band version.And Aussies being a competitive bunch might just find themselves spending more time on HF. Surely that is good news for the hobby.

You have had me checking my log to see what I could qualify for and I'm sure others would do the same. This new generation of certificates give us something else to strive for.

As for the rules, I am happy with them as they stand. The deleted country rule puts everyone on a level pegging. I believe however if a DXCC entity has not been activated for 5 years It should be deleted until it is. Some of these rare ones might not be active for extended periods due to being wildlife reserves and also in dangerous or life threatening areas and might just as well be deleted. This would allow the younger hams to achieve honour roll status, instead of having to wait 20 years between DXpeditions. This is only for the 3 & 5 Band certificates.The normal DXCC ladder must remain the same containing both current and deleted entities as it has been that way since it began, But I think that is how I understood it anyway.

The Certificates are first class.

Bernie VK4EJ.

On the certificate I would suggest that in the text that "Dx" be changed to "DX".

I wonder if an approach to the ARRL to use their LOTW as supplement to QSL Cards is worth considering as it is likely to be the way of the future. It may attract many who no longer chase cards due to the cost factor. It would be a good one to be involved with the LOTW early on in

its life. The computer transfer file would be interesting!

Jim VK3DBQ

I have no problem with the criteria that have to be met. The certificates look great. The three band award will give the small block Dxer like myself a goal to aim for which is achievable. I think the awards will be well accepted.

73 Dave VK3JMB

I am delighted that someone has actually taken the time to think about what could and can be offered to members who wish to apply for DXCC awards. Being a member of the WIA since 1981 I have always thought that the program might one day need a bit of a lift, and you have done this by the introduction of the 3 and 5 band DXCC awards program.

This will put some life back into the DXCC awards challenges, as most of us old timers have all the DXCC Countries now confirmed because of the "LAST ONE" most needed Nth Korea is just another notch on the wall now so as to speak. The 3 band award is a very nice stepping stone from the 100 countries award for some, but the one that takes my interest is the 5 BAND DXCC award. This is what the VK WIA Awards has been missing, and I am extremely pleased to see the introduction of an award of this excellence added to the fine list already obtainable from the WIA Awards Manager. 5 Band DXCC from Australia is not an easy feat especially on the "lower bands" it takes a lot of "reading the bands" with long hours in front of the radio and strange phone calls in weird hours of the morning, what is also needed is a wife and/or family that understand why you really have to be out of bed at someone's "grey-line" just to yell at them your 4 x 4 QSL. on 80 meters SSB. I can only speak for SSB as this is the mode my application is based on. Working the DX towards these awards is challenging, but what you will gain is lifelong friendship and admiration from fellow Australian amateurs striving for the same goal.

5BDXCC

Don't expect to do it overnight, it takes many hours of intense dedication, a good station, antennas and a "good set of ears" DXIS.

David J. McAulay VK3EW

Over the past few months I have been trying out the new 3 Band DXCC application and record sheets developed by the WIA Awards Manager.

I am not an Excel expert, all I know is how to enter the data and save, and I must say that Mal VK6LC has done a first class job in developing these new sheets. I found it easy to enter the data and I even learnt (sort of) how to cut and paste previous data I had.

Also the new certificates are excellent, I cannot wait to get my application in for my 3 Band DXCC.

Graham VK6RO

WIA Awards Program Schedule of Fees, dated 1st March 2005.

General Certificate Awards: (sized A4 and A3)

Australia.

W.I.A. members new applications - free.
Non-members new applications - $12.00 Aus.
W.I.A. members replacements - $10.00 Aus.
Non-members replacements - $12.00 Aus.
Overseas non-members - $12.00 U.S.D. or 10 IRCs.
Special reduced pricing for 2 or more awards under 250 grams postage.

DXCC Certificates award attachments.

DXCC Progress award (self adhesive) labels), increments of 25. (125-325).
W.I.A. members 25 cents $Aus each. non-members 30cents $Aus each.
Overseas non-members - $1 U.S.D. or 1 IRC for a quantity of 4 labels.

Honour Roll (self adhesive) label.

W.I.A. members $1.25 Aus each. non-members $1.30 Aus each.
Overseas non-members - $1 U.S.D. or 1 IRC each.

DXCC Excellence (self adhesive) label.

W.I.A. members $1.25 Aus each. non-members $1.30 Aus each.
Overseas non-members - $1 U.S.D. or 1 IRC each.

3 & 5 Band Certificates – 2005. (sized A3)

Australia.

W.I.A. members new applications – free (1only).
Non-members new applications - $14.00 Aus.
W.I.A. members replacements - $12.00 Aus.
Non-members replacements - $14.00 Aus.

Overseas

non-members - $12.00 U.S.D. or 10 IRCs.
Special reduced pricing for 2 or more awards under 250 grams postage.
3 & 5 Band DXCC Certificates award attachments.
3 Band DXCC Progress award (self adhesive) labels, increments of 50. (350-1000).
5 Band DXCC Progress award (self adhesive) labels, increments of 50. (550-1200).
W.I.A. members 30 cents $Aus each. non-members 35cents $Aus each.
Overseas non-members - $1 U.S.D. or 1 IRC for a quantity of 3 labels.

Honour Roll (self adhesive) label.

W.I.A. members $1.50 Aus each. non-members $2.00 Aus each.
Overseas non-members - $2 U.S.D. or 2 IRCs each.

DXCC Excellence (self adhesive) label.

W.I.A. members $1.50Aus each. non-members $2.00 Aus each.
Overseas non-members - $2 U.S.D. or 2 IRCs each.

Postage: (all Certificates are sealed in a quality Postal cylinder)

All Certificates are sent via economy mail postage. (max. 250 grams)
Australia – Australia Post standard economy road mail delivery.
Overseas - Australia Post standard economy mail delivery.
For those that need urgent delivery the "extra rates" are shown below.
Airmail postage from Australia to:
Australia. $3.10 Aus.
New Zealand. $1.50 Aus , $1.25 U.S.D. or 1 IRC.
Asia, Pacific Ocean. $1.25 U.S.D. or 1 IRC.
Europe. $1.25 U.S.D. or 1 IRC.
Nth. America, Middle East. $1 U.S.D. or 1 IRC.
Sth. America, Africa. $1.25 U.S.D. or 1 IRC.

Please note:

We only accept $Aus, $U.S.D. and IRCs for payment of all fees.
IRC Postal Currency must be dated no further than 1 year or 12 months old when received by the W.I.A. and be official Post Office stamped and dated.

Postal correspondence (airmail letter rate)

Australia 50cents $Aus, overseas $1.50 U.S.D. or 1 IRC. No charges for email.

ar

VHF/UHF – an expanding world

David Smith VK3HZ – vk3hz@wia.org.au
Leigh Rainbird VK2KRR – vk2krr@wia.org.au

Weak signal

David Smith VK3HZ

The continuation of good weather conditions in the south of the country has resulted in a few slow moving high-pressure systems moving across, producing some good propagation. In particular, on the evening of April 19th, a High settled over central Victoria producing good conditions in every which direction. Of note, Rob VK1ZQR reports working VK7JJ near Launceston. Bob VK2TG in Sydney reports hearing VK7JC, but no contact was made. The following morning, John VK5PO in the Barossa Valley reports working Joe VK7JG.

On several other occasions during April, conditions to the east from Adelaide have been excellent producing many QSOs between the stations present.

EME

Further to last month's report, Alan VK3XPD has successfully completed the first Australia-Italy QSO on 10 GHz EME. On May 4th, Alan worked IQ4DF – the Bagnara di Romagna 10 GHz EME Group station – with operator Vico I4ZAU. IQ4DF runs 200 watts to a 7 m dish.

I was fortunate enough to be in the shack while Alan was having this contact. Alan uses a camera mounted on the dish to point at the moon, but unfortunately the day was somewhat cloudy. Fortunately, he had "found" the moon during a clear spell and was able to keep track of it by peaking on the moon noise. We were hearing echoes quite well, even in an SSB bandwidth, with the S meter even kicking upwards at times. I was somewhat surprised by how clear the signal was given what I've read about smearing of microwave EME echoes due to libration. Alan's station is GPS-locked and so he was quite confident that he was on the correct frequency – allowing for a Doppler shift of around 27 kHz. Sked time passed and nothing had been heard in reply to Alan's CQs. Finally, he tuned around and found IQ4DF calling up 10 kHz with a big signal – the S meter was definitely off the stop. Alan completed the QSO looking like the proverbial one-armed dishwasher, operating the manual PTT and key while having to tweak the dish position during the over and then correcting for changes in Doppler shift. After the CW QSO was over, IQ4DF then called on SSB and was given a 54 report. Alan received 51. All in all, a very impressive showing and it's good to see that Alan's hard work is now paying off.

Weak signal operating hints

Some months ago, there was a discussion on the VK-VHF reflector about operating techniques for VHF/UHF weak signal operation. I thought it would be good to pass these tips on and I thank Gordon VK2ZAB, Chris VK2DO and Chas VK3PY for these words of wisdom.

Apart from the obvious technical requirements of a good location, high power, low noise figure and big antenna, there are operational factors that play a big part in the success or otherwise of making contacts with weak SSB stations on the VHF/UHF bands. Many stations run the legal limit, so even though you can hear them OK on your barefoot rig (generally 50 watts), they may be receiving you at a level up to 10 dB less. Some operating hints, in no particular order:

[1] If the situation arises where you are called by two DX stations, always work the weakest one first. If conditions deteriorate, you may lose the weak station, but still be able to work the stronger one.

[2] Repeat YOUR callsign. The other station is familiar with their own callsign, and is much more interested in knowing what your callsign is. So use "VK3ABC, this is VK3XYZ, VK3XYZ, VK3XYZ over".

[3] Do not place too much faith in phonetics. Some letters need them (e.g. "H") and some probably do not (e.g. "Z"). Repeat your callsign both as letters and phonetically. Unless you're working a ZL station or similar, don't use phonetics for the "VK" part. And try to stick to phonetics that the other station will be familiar with – preferably the standard set. Making up your own phonetics will have the other station doubly confused as they try to guess what you're saying.

[4] Call for a reasonable time, to allow the other station to peak their antenna on you. Try to get your (well-known) location or gridsquare across so that the other station can determine your heading. You may be off the back of their beam, so be patient as their rotator grinds around.

[5] Whistle "K" at the end of your overs. As CW operators well know, CW will get through where SSB will not. For a very weak station, the whistled "K" will often be the only thing heard, but it does indicate you are there and have finished your over.

[6] For a valid QSO, you need to exchange callsigns, signal reports and acknowledgements. Therefore, don't slacken off after the callsigns have gotten through. You're only a third of the way there!

[7] Finally, more to do with operating etiquette, if a local station has just ended a CQ call, wait a reasonable time for any possible reply before calling CQ yourself. While you may not hear a station responding to the CQ, it doesn't mean there isn't one.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

The magic band – 6 m DX

Brian Cleland VK5UBC

The summer DX season is now well and truly over, particularly for the southern states. Other than the odd interstate contact and the occasional beacon breaking through the band has been very quiet. Since early March there have been very few openings except between VK4 and northern VK6 to Japan. The 6 m Logger indicates that Japanese stations are hearing various Northern Australian beacons on most days with a few contacts occurring between VK4s and JAs.

The only recent DX heard in VK5 was on 2nd May when the Toowoomba Chan 0 TV was S9+ and I worked Alan VK4ID. This is the only VK5 opening I'm aware of since 29th March.

Joe VK7JG reports that 6 m opened between 0328 and 0411 UTC on 25th April 2005 for the first time since 24 Feb. Stations worked included VK4WS, VK4AFL, VK2HO, and VK4CDI. At one stage the TV interference from CH0 Toowoomba was S9 across the whole band. Alan VK7AN was also active from his shack just south of Eddystone Point on the East coast of Tasmania where he also worked most of the above stations as well as a VK6 and from Hobart Ian VK7ZIF was among the DX.

A bit different if you live in far north Queensland as can been seen from the note I received from John VK4FNQ. John summarized his log from the 1st January and reports;

I've made 779 entries into the heard database, which also covers TV indicators out side VK.

Worked 196 stations on six on SSB since 01 January 2005 comprising:

VK1 – 2, VK2 – 24, VK3 – 8, VK4 – 23, VK5 - 11 (8 with VK5UBC), VK6, 7 & 8 – 0.

On the international scene John reports a total of 118 JA contacts have been made, 4 Korean contacts as follows, 10 March 6K2DHP, 12 March HL2FDA, 13 March HL2JFM and 13 April HL4GHT, 3 Chinese contacts as follows, 13 Mar BD9BA, 14 April BD4XA and BD9SI. Also 3 ZL contacts.

John also reports hearing the following,

FK8SIX/B 40 entries from 08/01/05 to 16/03/05 last heard

VK8RAS 16 entries from 11/01/05 to 16/02/05 last heard

VK8MS Mark only heard once 19/02/05

KH6SX on 09 Mar 2005.

From Perth John VK6JJ had a good day on the13th April with a good opening to Japan. John reports signal were up to S9 and that he worked 7 JAs, 4 on CW and 3 on SSB.

Information from the 6 m propagation logger indicates that on the 5th May JAs worked into northern VK4 & 6 and Gary VK4ABW worked KH6SX.

A good opening occurred between VK6 & 5 on the afternoon of 6th May. Both the VK6RPH (Perth) and VK6RBU (Bunbury) beacons were strong in Adelaide with VK5UBC working Peter VK6KXW and JohnVK6JJ (5/9+).

Please keep those 6 m rigs running during June as often good sporadic E interstate openings occur in this period.

Please remember to send any 6 m DX information to Brian VK5UBC at bcleland@picknowl.com.au. I can only report what I know.

Digital DX Modes

Rex Moncur VK7MO

Recently a few stations have reported problems in decoding FSK441 with WSJT. In most cases these have been caused by inadequate audio frequency response to cover the audio tones used by FSK441. The problems can often be traced to things like the use of too narrow an IF filter, the use of IF shift or the use of DSP notches or noise reducing systems. While such features can be valuable for SSB, it is best to let WSJT do all the filtering and keep the passband as wide as possible when using this program. This is something to remember in changing from SSB to WSJT. It is also possible that poorly matched interface units could limit the audio response.

WSJT includes a facility that tries to automatically compensate for variations in the audio response but it has limits and to my mind one should aim to keep the audio passband as flat as possible within the range of frequencies used by FSK441. While FSK441 uses tones of 882, 1323, 1764 and 2205 Hz one must in addition allow for sidebands as these tones are switched at 441 times per second. In addition one must allow for stations to vary in frequency and for Doppler shift due to the movement of meteor trails in the winds of the upper atmosphere. Taking all these factors I think one should look for a reasonably flat passband from around 500 to 2600 Hz. It is difficult to say what reasonably flat is but certainly 20 dB causes significant decoding problems and I would aim for less than 6 dB variation over the range 500 to 2600 Hz.

It is possible to use the program SPECTRAN that is packaged with WSJT to make a simple but accurate plot of the audio passband. First feed your receiver from a 50 ohm load to produce a white noise source and make sure there are no birdies. The procedure with SPECTRAN is as follows:

Under the "show controls" dialog box set SPECTRAN as follows:

Freq. Offset = 0

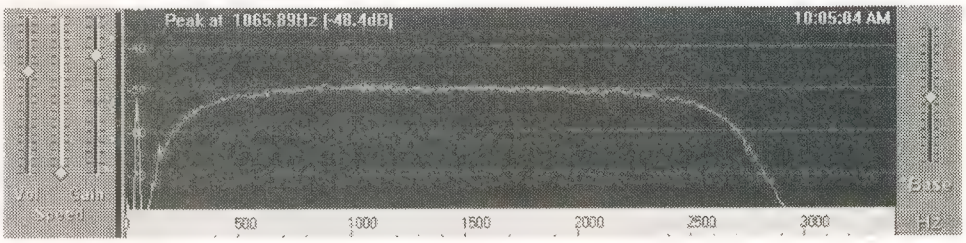

Figure 1

Resolution = 5.4
Avg Factor = 128
Sampling Rate = 11025
Tick Block Average
On the normal SPECTRAN Screen set:
Gain: to 5 marks from the top
Base: to around midscale or so you see the audio spectrum centred in the upper window.

Press the Average button so it highlights in Red

Start SPECTRAN and it will build up an average spectrum in about 30 seconds.

Figure 1 on page 49 shows an example average audio spectrum for the IC-910-H with its standard filter. It has dropped off by about 3 dB at 500 Hz and about 6 dB at 2600 Hz. You will also notice AC line spikes at 50 Hz and 150 Hz but these are sufficiently low in frequency so as not to be a problem.

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@bigpond.net.au.

2 m & 70 cm FM DX

Leigh Rainbird - VK2KRR

During April, the Canberra 146.950 repeater was the focus of some amazing DX activity from areas of VK2, 3, 5 and VK7. Remaining quiet in most other areas.

In the morning of 12/04, the first part of our Canberra repeater DX frenzy kicked off. The signal quality ranged from noisy to noise free with a slow QSB. Two of the first stations to realise the path to the Canberra repeater was there were George VK3HV in Morwell at 430 km, followed by Phil VK1PC who was actually mobile west of Hay, about 450 to 500 km out. Later in the morning, stations that I heard call in were Bruce 2AYM near Albury, 200 km; Ed VK3BG near Cobram, 290 km; Grant VK2AXB near Orange, 250 km; Ian VK3ZZG and Richard VK3JFK both mobile at Bendigo, 470 km; Ralph VK3WRE at Traralgon, 430 km and Bob VK3AQK, unknown location.

The Canberra repeater DX frenzy part 2 began in the evening of 20/04. Only a week before this I had been commenting that it had been at least 4 years since I had heard any DX from VK7 into the Canberra repeater, and what do you know, in it comes!

At 10.20 PM a call into the repeater by Peter VK7LCW started it all! Peter is located at Penguin on the Tasmanian north coast, 663 km from Mt Ginini 146.950. The rare DX call was quickly snapped up by Paul VK2ZPB not far from Canberra and Wayne VK2PDW in Wagga, also in came George VK3HV at Morwell.

At 11 PM, Phil VK7JJ then called into VK1RGI Canberra. Phil is at Weymouth, 625 km from the repeater and was punching a very good signal in and commented the repeater was 5/9+20 at his QTH. Shortly after midnight another amazing signal found its way into VK1RGI, that of John VK5PO at Eden Valley, an amazing 884 km from the repeater. John was able to speak with Rob VK1ZQR and also Phil VK7JJ. Rob VK1ZQR was able to work VK7JJ on SSB but could also hear Phil on FM.

The following morning 21/04, more amazing signals were heard into VK1RGI. John VK5PO was again getting to the repeater, albeit noisily at 11.30 AM. At 3 PM, Steve VK2UD was in on a 400 km path from Newcastle.

Later at 6.45 PM things were still happening when John VK5NJ in Mount Gambier got into VK1RGI over 756 km, and only running a 5/8 wave omni. At 7.15 PM, Ken VK3HKR just east of Melbourne made it in, as did George VK3HV. At 9.30 PM, VK5NJ was back, also Steve VK3TSR at Yarra Junction, 376 km.

After 10.30 PM, more excitement when into VK1RGI came Peter VK2ZTV, Steve VK2UD and Peter VK2YPW all from Newcastle, they spoke to VK5NJ in Mount Gambier and also Craig VK3MCW in Colac, 556 km. Following this were Brian VK3BBB at Traralgon and Mark VK3HMB at Wangaratta.

A final short burst of life was shown from the duct in the early evening 22/04. I was surprised to hear a call into the Canberra repeater from Ian VK3IDL at Ballarat, 493 km. Then from Les VK3TEX at Kyabram, 346 km.

I have analysed the apparent cause of these conditions and found a high level duct around the Canberra repeater height, 1700 MASL, over Canberra, this dropped to lower levels around VK3, 5 & 7, but was still an unusually high duct (1000 m +) to still be workable from these areas.

Please remember to send through any 2 & 70 FM DX reports to Leigh VK2KRR at vk2krr@wia.org.au.

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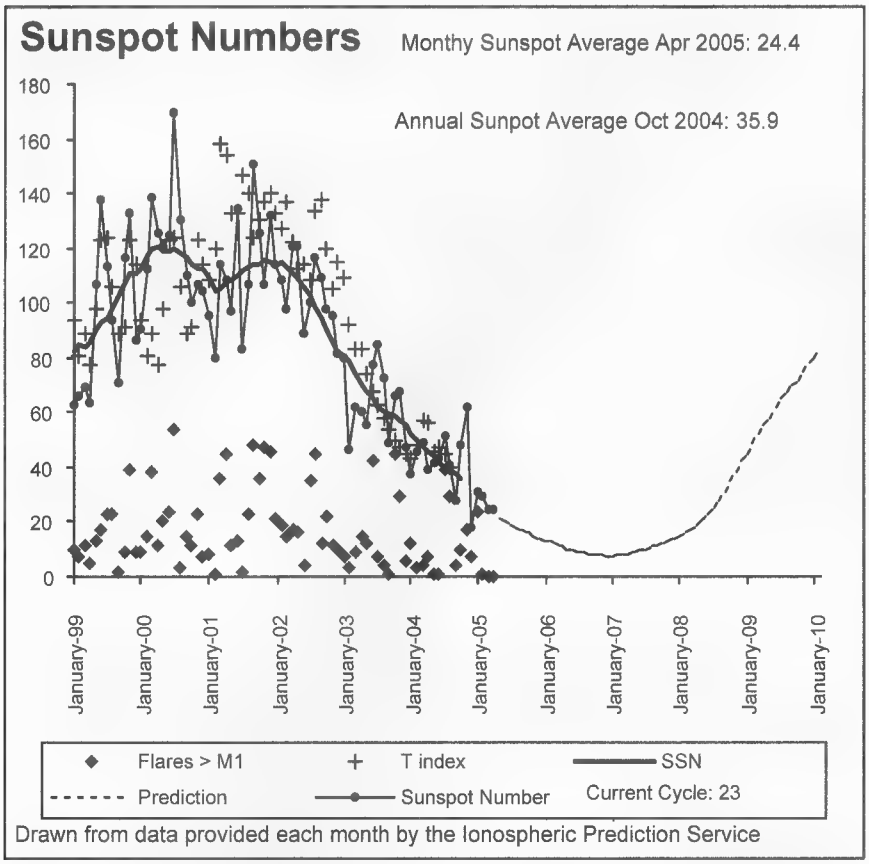

Drawn from data provided each month by the Ionospheric Prediction Service

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Ken Matchett VK3TL
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HF Predictions

by Evan Jarman VK3ANI
34 Alandale Court Blackburn Vic 3130

June 2005
T index: 25

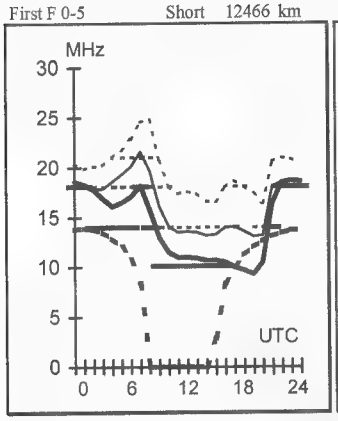
Legend
Frequency scale
UD
E-MUF
OWF
F-MUF
ALF
>10%
>50%
>90%
Time Scale

These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.
These frequencies as identified in the legend are:-

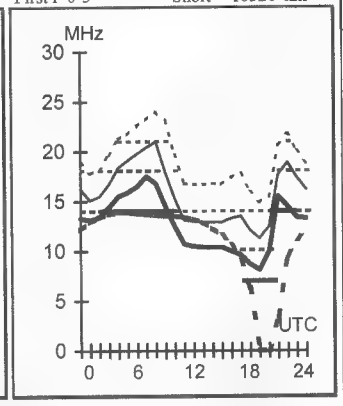
- Upper Decile (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit.
These predictions were made with the Ionospheric Prediction Service program: ASAPS Version 4

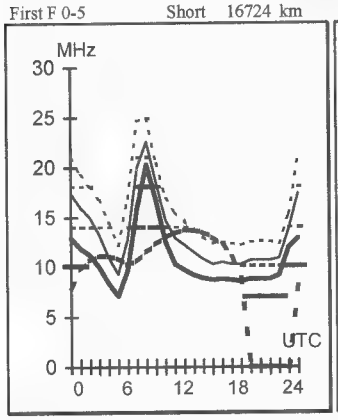
Adelaide-Achorage 30
First F 0-5 Short 12466 km



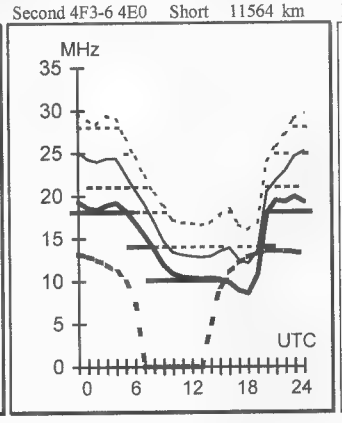
Brisbane-Berne 315
First F 0-5 Short 16321 km



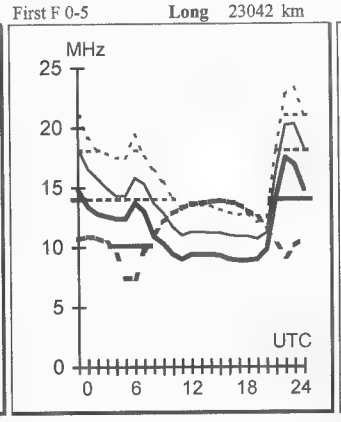
Adelaide-Dakar 233
First F 0-5 Short 16724 km



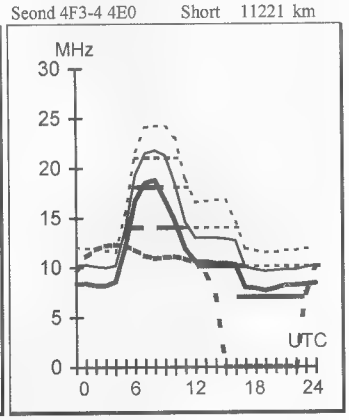
Brisbane-Los Angeles 59
Second 4F3-6 4E0 Short 11564 km



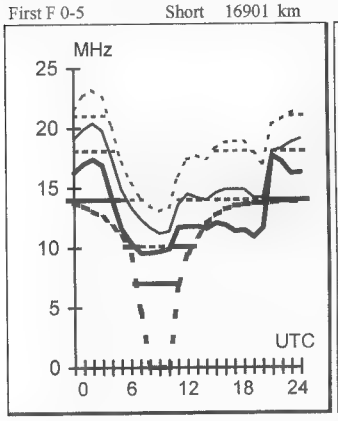
Canberra-London 136
First F 0-5 **Long** 23042 km



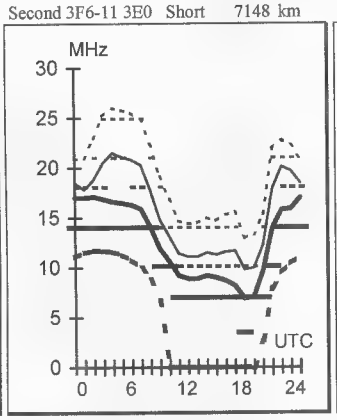
Darwin-Capetown 231
Second 4F3-4 4E0 Short 11221 km



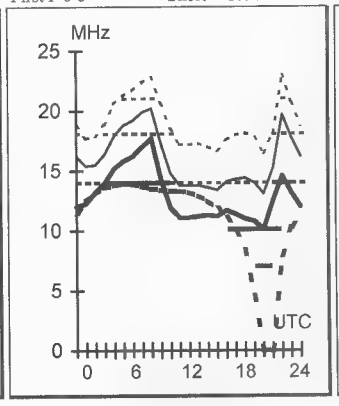
Adelaide-Ottawa 58
First F 0-5 Short 16901 km



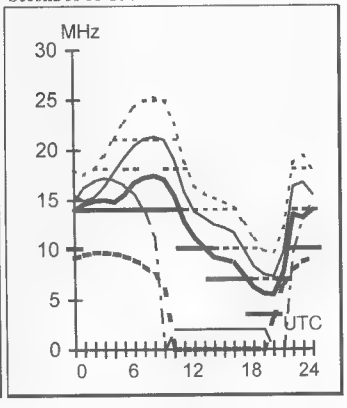
Brisbane-Osaka 344
Second 3F6-11 3E0 Short 7148 km



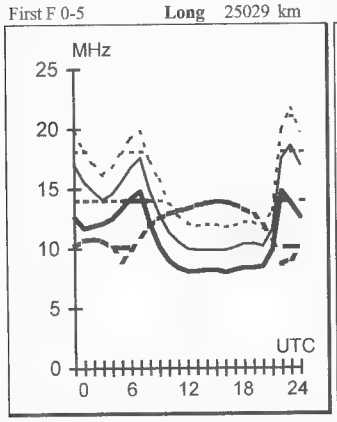
Canberra-London 316
First F 0-5 Short 16982 km



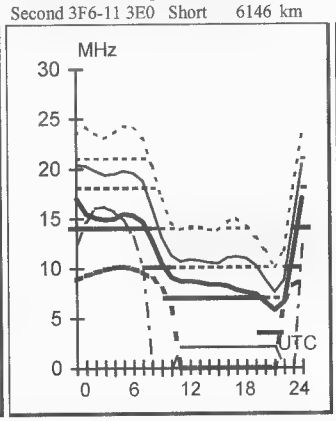
Darwin-Tokyo 10
Second 3F11-18 3E Short 5436 km



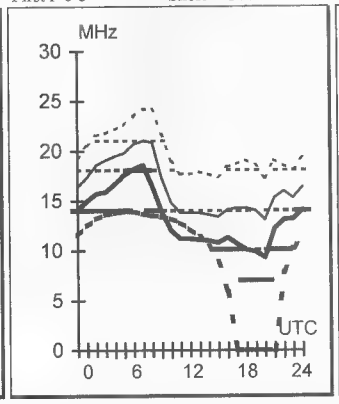
Adelaide-Stockholm 142
First F 0-5 **Long** 25029 km



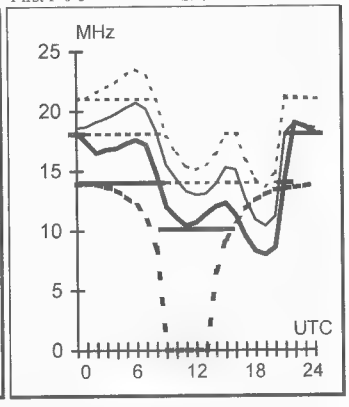
Brisbane-Singapore 293
Second 3F6-11 3E0 Short 6146 km



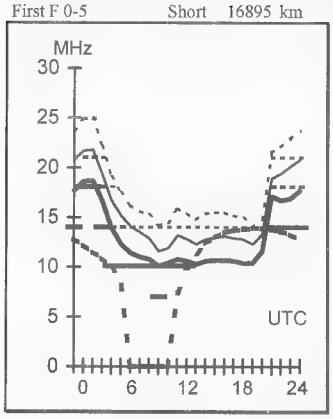
Canberra-Moscow 317
First F 0-5 Short 14481 km



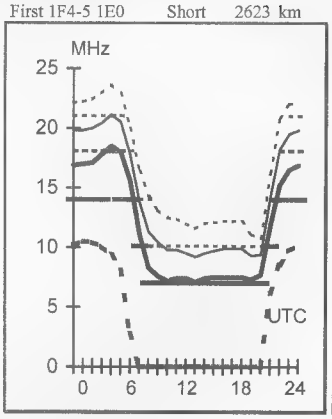
Darwin-Vancouver 42
First F 0-5 Short 12212 km



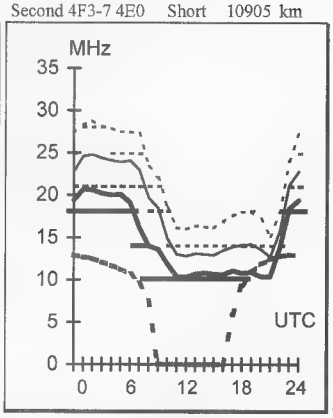
Hobart-Boston 78
First F 0-5 Short 16895 km



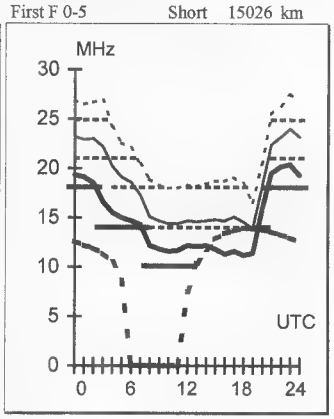
Melbourne-Auckland 97
First 1F4-5 1E0 Short 2623 km



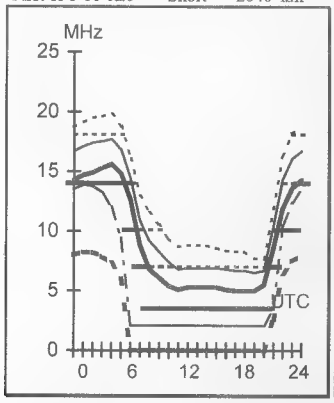
Perth-Honolulu 70
Second 4F3-7 4E0 Short 10905 km



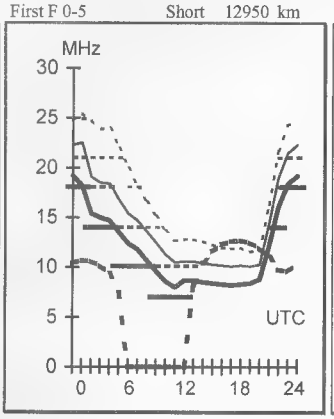
Sydney-Miami 86
First F 0-5 Short 15026 km



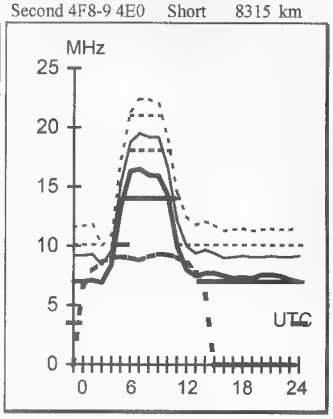
Hobart-Christchurch 101
First 1F8-10 1E0 Short 2040 km



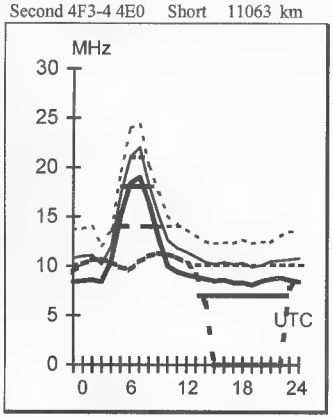
Melbourne-Lima 133
First F 0-5 Short 12950 km



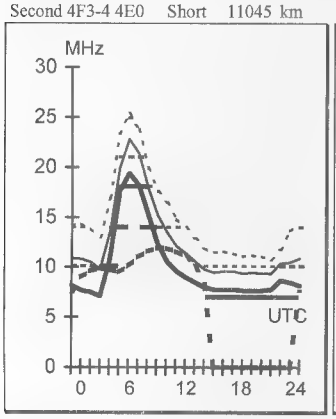
Perth-Johannesburg 248
Second 4F8-9 4E0 Short 8315 km



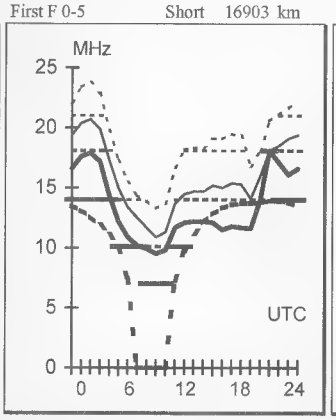
Sydney-Pretoria 230
Second 4F3-4 4E0 Short 11063 km



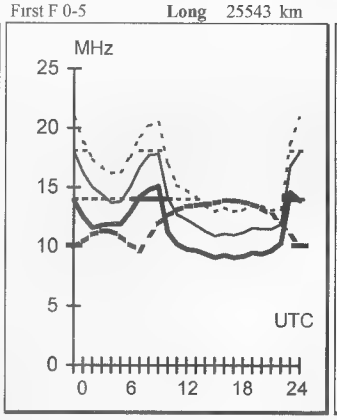
Hobart-Lusakar 239
Second 4F3-4 4E0 Short 11045 km



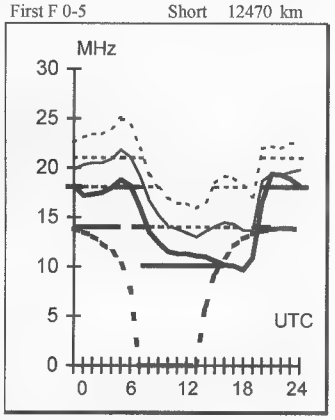
Melbourne-Montreal 60
First F 0-5 Short 16903 km



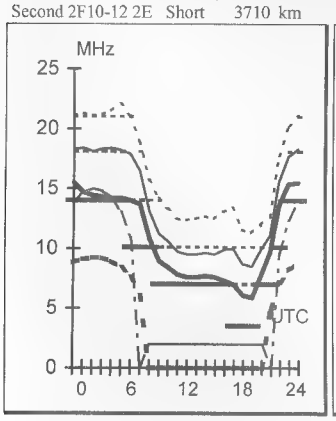
Perth-London 133
First F 0-5 **Long** 25543 km



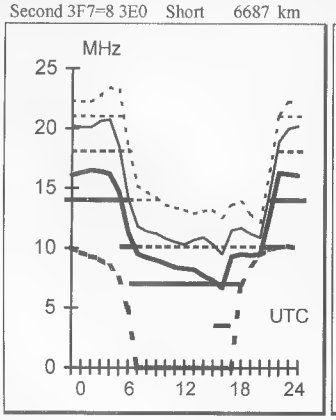
Sydney-Seattle 47
First F 0-5 Short 12470 km



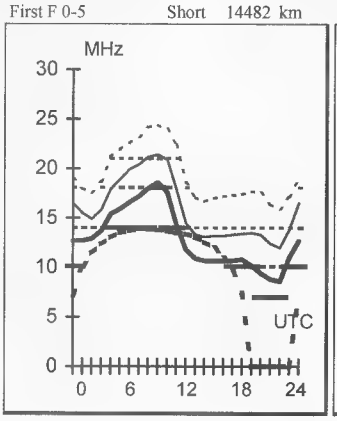
Hobart-Port Moresby 360
Second 2F10-12 2E Short 3710 km



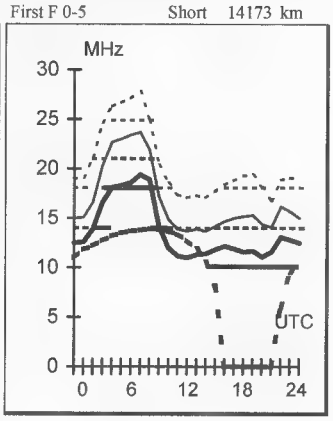
Melbourne-Papeete 90
Second 3F7=8 3E0 Short 6687 km



Perth-London 313
First F 0-5 Short 14482 km



Sydney-Tel Aviv 287
First F 0-5 Short 14173 km



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NB - I am not an authorised dealer for The radio companies listed above. These companies may refuse service on equipment sold by me - but other servicing options are available in the VK market.

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Directory

The Amateur Service:

a radio communications service for the purpose of self training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique with a personal aim and without any pecuniary interest. 1.56 ITU Radio Regulations.

The Wireless Institute of Australia represents the interests of all amateurs throughout Australia.

WIA membership fees are: ★ **$ 75 for full members (F grade),** ★ **$ 70 for pensioners and students (G and S grade), and** ★ **$ 50 for membership without 'Amateur Radio' (X grade).** ***Payment direct to National office.***

National Office	Contact	News Bulletin Schedule
10/229 Balaclava Road, Caulfield North VIC 3161, PO Box 2175 Caulfield Junction Vic 3161 Australia	Phone 03 9528 5962, Fax 03 9523 8191, 10am to 4pm daily, nationaloffice@wia.org.au http://www.wia.org.au	Subject to change see www.wia.org.au follow national news prompts. Contact nationalnews@wia.org.au National VK1WIA news is distributed to all states.

Advisory Committees	Contact	News Bulletin Schedule
VK1 Australian Capital Territory VK1WX Alan Hawes VK1ZPL Phil Longworth VK1ET John Woolner VK1GH Gil Hughes	secretary@vk1.wia.ampr.org	Sundays at 11.00 am VK1WIA 7.128, 146.950,438.050 Canberra Region Amateur Radio Club Email newsletter will be sent on request to president@vk1.ampr.org
VK2 New South Wales VK2QV Chris Flak VK2XCD Chris Devery VK2BFN Adrian Clout	Phone 02 9689 2417	VK2WI - Sunday 1000 and 1930 hours local.1.845; 3.595; 7.146; 10.125; 14.170; 28.320, 52.525; 145.600; 147.000; 438.525; 1273.500 megahertz. Plus regional relays. VK1WIA news included in the morning
VK3 Victoria VK3JJB John Brown VK3PC Jim Linton VK3APO Peter Mill	Phone 03 9885 9261 advisory@wiavic.org.au	VK1WIA Sunday 11.0am via HF and major VHF / UHF rptrs
VK4 Queensland VK4ERM Ewan McLeod VK4ZZ Gavin Reibelt	Phone 07 3221 9377 ewan.mcleod@bigpond.com	VK1WIA, Sunday 9.0am via HF and major VHF/UHF rptrs
VK5 South Australia and Northern Territory VK5NB Jim McLachlan VK5APR Peter Reichelt VK5ATQ Trevor Quick	Phone 08 8294 2992 jimac@picknowl.com.au peter.reichelt@bigpond.com vk5atq@chariot.net.au	VK5WI: 1843 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.800 FM Mildura, 146.900 FM South East, 146.925 FM Central North, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 LSB, 7.065 LSB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. The repeat of the broadcast occurs Monday Nights at 1930hrs on 3585kHz and 146.675 MHz FM. The broadcast is available in 'Realaudio' format from the website at www.sant.wia.org.au Broadcast Page area.
VK6 Western Australia VK6NE Neil Penfold VK6XV Roy Watkins VK6OO Bruce Hedland-Thomas	Phone 08 9351 8873 http://www.vk6.net/ advisory@vk6.net vk6ne@upnaway.com vk6xv@bigpond.net.au	VK6WIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz, Country relays 3.582, 147.200 (R) Cataby, 147.350 (R) Busselton, 146.900 (R) Mt William (Bunbury).147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz : country relays on 146.900,147.000, 147.200, 147.250 and 147.350 MHz..Also in "Real Audio" format from the VK6 WIA website
VK7 Tasmania VK7ZAX Phil Corby VK7DG Dale Barnes VK7KK Reg Emmett	Phone 03 6234 3553 phil.corby@tassie.net.au vk7dg@wia.org.au regemm@ozemail.com.au	VK1WIA Sunday 9am on VK7WI network: 3.570MHz LSB, 146.700 MHz FM (VK7RHT South), 53.825MHZ FM (VK7RAD South), 147.000MHz FM (VK7RAA North), 146.750 FM & 53.825MHz (VK7RNW North West), 146.625 MHz FM (VK7RMD North West), UHF CB Channel 15 (Hobart) and 27MHz CB - 27.225MHz LSB (Hobart). Followed at 9:30am with VK7 Regional News Broadcast also on 7.090MHz LSB & 14.130MHz USB

Notes

1. Only three members of the state advisory committees are listed.
2. All listings are preliminary. They will be updated each month as required.
3. Membership application forms are available from the WIA web site www.wia.org.au or the national office address above.

WIA World wide AWARDS PROGRAM Certificates

see Awards column on page 40

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